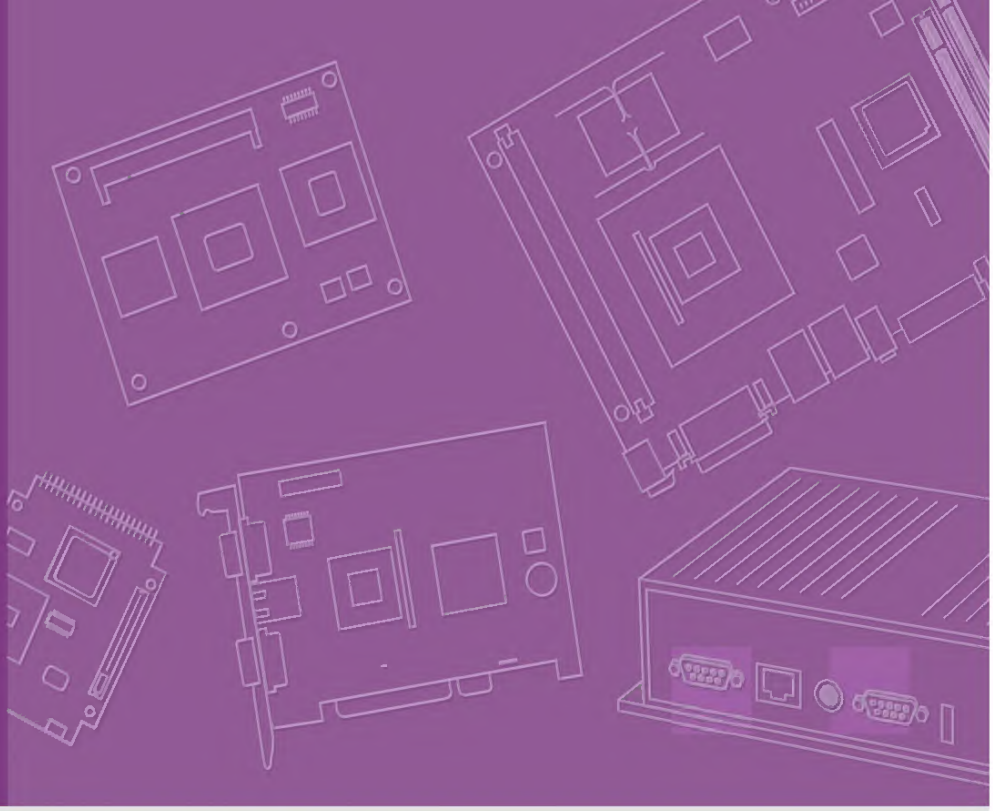


User Manual

PCM-9587

Onboard Intel® Celeron M EBX SBC with Audio, VGA, LCD, SATA

Trusted ePlatform Services

ADVANTECH

Downloaded from www.Manualslib.com manuals search engine

Copyright

The documentation and the software included with this product are copyrighted 2008 by Advantech Co., Ltd. All rights are reserved. Advantech Co., Ltd. reserves the right to make improvements in the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of Advantech Co., Ltd. Information provided in this manual is intended to be accurate and reliable. However, Advantech Co., Ltd. assumes no responsibility for its use, nor for any infringements of the rights of third parties, which may result from its use.

Acknowledgements

Award is a trademark of Award Software International, Inc.

VIA is a trademark of VIA Technologies, Inc.

IBM, PC/AT, PS/2 and VGA are trademarks of International Business Machines Corporation.

Intel and Pentium are trademarks of Intel Corporation.

Microsoft Windows® is a registered trademark of Microsoft Corp.

RTL is a trademark of Realtek Semi-Conductor Co., Ltd.

ESS is a trademark of ESS Technology, Inc.

UMC is a trademark of United Microelectronics Corporation.

SMI is a trademark of Silicon Motion, Inc.

Creative is a trademark of Creative Technology LTD.

CHRONTEL is a trademark of Chrontel Inc.

All other product names or trademarks are properties of their respective owners.

For more information on this and other Advantech products, please visit our websites at: **http://www.advantech.com**

http://www.advantech.com/eplatform

For technical support and service, please visit our support website at:
http://www.advantech.com/support

This manual is for the PCM-9587.

Part No. 2006958701 Edition 2

Printed in Taiwan September 2008

Downloaded from www.Manualslib.com manuals search engine

Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- •1 PCM-9587 all-in-one single board computer
- •1 CD disk for utility and drivers
- •1 startup manual
- •1 Mini Jumper*10 PCS Package (p/n: 9689000002)
- 1 ATX power cable (p/n:1700001112)
- 1 X Heatsink (50*50*30mm)

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Order Information

Part No.	CPU	L2 Cache	CRT	LVDS	DVI	TV out	10/100 LAN	Audio	USB2.0	RS-232	RS-232/ 422/485	LPT/FDD/ KB/MS	CF	SATA	PC/ 104+	PCI Slot	Mini PCI	Thermal Solution	Operation Temp.
PCM-9587F-M0A1E	Celeron M 600 MHz	512 KB	Yes	36-bit	Yes	Optional	1	Yes	4	3	1	Yes	Yes	2	Yes	1	1	Passive	0~60°C
PCM-9587F-S0A1E	Celeron M 1.0 GHz	0 KB	Yes	36-bit	Yes	Optional	1	Yes	4	3	1	Yes	Yes	2	Yes	1	1	Passive	0~60°C
PCM-9587Z-M0A1E	Celeron M 600 MHz	512 KB	Yes	36-bit	Yes	Optional	1	Yes	4	3	1	Yes	Yes	2	Yes	1	1	Passive	-20~60°C
PCM-9587Z-S0A1E	Celeron M 1.0 GHz	0 KB	Yes	36-bit	Yes	Optional	1	Yes	4	3	1	Yes	Yes	2	Yes	1	1	Passive	-20~60°C

PS: 48-bit LVDS possible btu need to confirm with AE for evaluation

Optional accessories

Part No.	Description
PCM-10586-6200E	Wiring kit for PCM-9582/9587
17030506	TV-out cable
1703100260	USB cable (26 cm)
1703100121	USB cable (12 cm)
PCM-110-00A3E	1-slot PCI riser card for 5.25" biscuits
PCM-120-00A3E	2-slot PCI riser card for 5.25" biscuits
PCM-200-00A2E	PCI-104 to PCI bus module
MIO-3120-00A1E	Mini PCI interface to Wireless 802.11 b/g communication module
MIO-3121-00A1E	Mini PCI to 4 COM Module
MIO-3140-00A1E	Mini PCI interface to SATA storage module
MIO-3150-00A1E	Mini PCI interface to video capture module
MIO-3130-00A1E	Mini PCI interface to Dual LAN Communication Module
MIO-3131-00A1E	Mini PCI interface to Single Giga LAN Communication Module

Downloaded from www.Manualslib.com manuals search engine

Declaration of Conformity

FCC Class A

This device complies with the requirements in part 15 of the FCC rules: Operation is subject to the following two conditions:

1.This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution! *There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.*

Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Downloaded from www.Manualslib.com manuals search engine

Contents

Chapter 1 General Information 1

1.1 Introduction 2
1.2 Features 2
1.3 Specifications 2
1.4 Board layout: dimensions 4
Figure 1.1 Board layout: dimensions (component side) 4
Figure 1.2 Board layout: dimensions (solder side) 4

Chapter 2 Installation.....5

2.1 Jumpers 6
Table 2.1: Jumpers 6
2.1.1 Jumpers setting drawing 6
Table 2.2: J1: LCD Voltage Select 6
Table 2.3: J2: PC104+ VIO Select 6
Table 2.4: J3: Clear CMOS function Select 6
Table 2.5: J5: COM2 RS 232/422/485 Select 7
2.2 Connectors 8
Table 2.6: Connectors 8
2.3 Locating jumpers and Connectors 9
Figure 2.1 Jumper & Connector (component side) 9
Figure 2.2 Jumper & Connector (solder side) 9
2.4 Setting Jumpers 10
2.5 Clear CMOS (J3) 10
2.6 Installing DIMMs 11
2.7 IDE, CDROM hard drive connector (CN15) 11
2.7.1 Connecting the hard drive 11
2.8 Solid State Disk 11
2.8.1 CompactFlash (CN30) 11
2.9 Floppy drive connector (CN14) 12
2.9.1 Connecting the floppy drive 12
2.10 Parallel port connector (CN16) 12
2.11 Keyboard and PS/2 mouse connector (CN27) 12
2.12 Front Panel Connector (CN22) 13
2.12.1 Power & HDD LED (pin 1-4 of CN22) 13
2.12.2 Reset switch (pin 13-14 of CN22) 13
2.13 Power connectors (CN25,CN5) 13
2.13.1 ATX power connector, +5V (CN5) 13
2.13.2 CPU Fan power supply connector (CN25) 13
2.14 ATX power ON/OFF switch con. pin 11-12 of CN22 13
2.14.1 ATX feature (CN5) & soft power switch (CN22) 13
2.15 Audio AC'97 Link interfaces (CN4) 14
2.15.1 Audio connector(CN4) 14
2.15.2 CD audio-in connector (CN3) 14
2.16 COM port connector (CN21) 14
2.17 VGA/LVDS interface connections (CN7, CN8,CN9) 14
2.17.1 CRT display connector (CN7) 14
2.17.2 LVDS LCD panel connector (CN8) 14
2.17.3 DVI LCD panel connector(CN9) 15
Table 2.7: CN9: DVI connector 15
2.18 TV-out interface (CN2) (TV out optional by request) 15
2.19 Ethernet configuration (CN11) 15
2.19.1 100Base-T connector (CN11) 15
2.19.2 Network boot 15

Downloaded from www.Manualslib.com manuals search engine

2.20 USB connectors (CN18,CN20) 16
Table 2.8: CN18: USB port 3/4 16
Table 2.9: CN20: USB PORT 1/2 16
2.21 LCD Backlight connector (CN1) 16
2.22 SATA Connector (CN23, CN24) 16
2.23 DIO connector (CN19) 16
2.24 -12V and -5V connector (CN6) 16
2.25 Extension SMBUS connector (CN26) 16
2.26 System FAN connector (CN13) 17
Table 2.10:CN13: System FAN connector 17

Chapter 3 Software Configuration 19

3.1 Introduction 20
3.2 Connections to Standard LCDs 20
3.2.1 LG LM150X06 (1024x768(16 colors) LVDS LCD) 20
Table 3.1: Connections to LCD/ Flat Panel (CN8) 20

Chapter 4 Award BIOS Setup 21

4.1 System test and initialization 22
4.1.1 System configuration verification 22
4.2 Award BIOS setup 22
4.2.1 Entering setup 22
Figure 4.1 BIOS setup program initial screen 22
4.2.2 Standard CMOS Features setup 23
Figure 4.2 CMOS Features setup 23
4.2.3 Advanced BIOS Features setup 23
Figure 4.3 Advanced BIOS Features setup 23
4.2.4 Advanced Chipset Features setup 24
Figure 4.4 Advanced Chipset Features setup 24
4.2.5 Integrated Peripherals 24
Figure 4.5 Integrated Peripherals 24
4.2.6 Power Management Setup 25
Figure 4.6 Power Management Setup 25
4.2.7 PnP/PCI Configurations 25
Figure 4.7 PnP/PCI Configurations 25
4.2.8 PC Health Status 26
Figure 4.8 PC Health Status 26
4.2.9 Frequency/Voltage Control 26
Figure 4.9 Frequency/Voltage Control 26
4.2.10 Load Optimized Defaults 27
Figure 4.10 Load Optimized Defaults 27
4.2.11 Set Password 27
4.3 Save & Exit Setup 28
4.3.1 Exit Without Saving 28

Chapter 5 PCI Graphic 29

5.1 Introduction 30
5.1.1 Chipset 30
5.1.2 Display memory 30
5.1.3 Display types 30
5.1.4 Dual/Simultaneous Display 30
5.2 Installation of the PCI Graphic driver 32
5.2.1 Installation for Windows 2000/XP 32
5.3 Further Information 34

Downloaded from www.Manualslib.com manuals search engine

Chapter 6 Audio Setup 35

6.1 Introduction 36
6.2 Driver installation 36
6.2.1 Before you begin 36
6.2.2 Windows 2000/XP drivers 36

Chapter 7 LAN Configuration 39

7.1 Introduction 40
7.2 Features 40
7.3 Installation of Ethernet Driver 40
7.3.1 Installation for Windows 2000 40
7.4 Further information 46

Appendix A Programming the GPIO and Watchdog Timer 47

A.1 Supported GPIO Register 48
A.1.1 GPIO Registers 48
A.1.2 GPIO Example program-1 48
A.2 Watchdog programming 50

Appendix B Pin Assignments 51

B.1 LCD Backlight Connector (CN1) 52
Table B.1: LCD Backlight Connector (CN1) 52
B.2 TV Out Connector (CN2) (TV out optional by request) 52
Table B.2: TV Out Connector (CN2) (TV out optional by request) 52
B.3 CD-IN Connector (CN3) 52
Table B.3: CD-IN Connector (CN3) 52
B.4 Audio Output Connector (CN4) 53
Table B.4: Audio Output Connector (CN4) 53
B.5 Power input Connector (CN5) 53
Table B.5: Power input Connector (CN5) 53
B.6 -12V and -5V Connector (CN6) 53
Table B.6: -12V and -5V Connector (CN6) 53
B.7 VGA Connector (CN7) 54
Table B.7: VGA Connector (CN7) 54
B.8 LVDS Connector (CN8) 54
Table B.8: CN8 LVDS connector 54
B.9 DVI Connector (CN9) 55
Table B.9: DVI Connector (CN9) 55
B.10 Gigabit LAN Connector (CN10 Optional) 55
Table B.10:Gigabit LAN Connector (CN10) 55
B.11 10/100M LAN Connector (CN11) 55
Table B.11:10/100M LAN Connector (CN11) 55
B.12 Gigabit LAN LED Connector (CN12 Optional) 56
Table B.12:Gigabit LAN LED Connector (CN12) 56
B.13 System FAN Connector (CN13) 56
Table B.13:System FAN Connector (CN13) 56
B.14 Floppy Disk Drive Connector (CN14) 56
Table B.14:Floppy Disk Drive Connector (CN14) 56
B.15 Primary HDD Connector (CN15) 57
Table B.15:Primary HDD Connector (CN15) 57

Downloaded from www.Manualslib.com manuals search engine

B.16 Printer Port Connector (CN16) 57
Table B.16:Printer Port Connector (CN16) 57
B.17 USB Connector (CN18,20) 58
Table B.17:USB Connector (CN18,20) 58
B.18 DIO Connector (CN19) 58
Table B.18:DIO Connector (CN19) 58
B.19 COM Port Connector (CN21) 59
Table B.19:COM Port Connector (CN21) 59
B.20 Front Panel Connector (CN22) 60
Table B.20:Front panel Connector (CN22) 60
B.21 SATA Connector 1 (CN23) 60
Table B.21:SATA Connector 1 (CN23) 60
B.22 SATA Connector 2 (CN24) 61
Table B.22:SATA Connector 2 (CN24) 61
B.23 CPU FAN Connector (CN25) 61
Table B.23:CPU FAN Connector (CN25) 61
B.24 Extension SMBUS Connector (CN26) 61
Table B.24:Extension SMBUS Connector(CN26) 61
B.25 Keyboard and PS/2 Mouse Connector (CN27) 62
Table B.25:Keyboard and Mouse Connector (CN27) 62
B.26 CPU FAN Connector (wafer box)(Optional)(CN28) 62
Table B.26:CPU FAN Connector (wafer box)(Optional)(CN28) .. 62
B.27 Mini PCI Connector(CN29) 63
Table B.27:Mini PCI Connector (CN29) 63
B.28 CompactFlash Card Connector (CN30) 63
Table B.28:CompactFlash Card Connector (CN30) 63

Appendix C System Assignments 65

C.1 System I/O Ports 66
Table C.1: System I/O Ports 66
C.2 1st MB memory map 67
Table C.2: 1st MB memory map 67
C.3 DMA channel assignments 67
Table C.3: DMA channel assignments 67
C.4 Interrupt assignments 68
Table C.4: Interrupt assignments 68

Appendix D Optional Extras for the PCM-9587 ... 69

D.1 PCM-10586-6200E Cable kit for PCM-9587 70
Table D.1: PCM-10586-6200E wiring kit 9587 70

Appendix E Mechanical Drawings 71

E.1 Mechanical Drawings 72
Figure E.1 PCM-9587 Mechanical Drawing (component side) .. 72
Figure E.2 PCM-9587 Mechanical Drawing (solder side) 73

Downloaded from www.Manualslib.com manuals search engine

Chapter 1

General Information

This chapter gives background information on the PCM-9587. Sections include:

- Introduction
- Features
- Specifications
- Board layout and dimensions

Downloaded from www.Manualslib.com manuals search engine

1.1 Introduction

The PCM-9587 series is a EBX SBC (Single Board Computer) designed with the powerful Intel Celeron M processor, and Intel 852GM and 6300ESB chipsets, which supports Dynamic Video Memory Technology For maximum performance. PCM-9587 also supports one 184 PIN DIMM socket for ECC DDR memory up to 1GB. These chipsets are specifically for embedded computing and provide an optimized on-board integrated graphics solution.

Other on-board features include 1 EIDE, 2 SATAs, 1 FDD, 1 LPT, 4 USB2.0, 4 serial ports(3 x RS-232 and 1 x RS-232/422/485), PS/2 KeyBoard/mouse, watchdog. The SSD solution supports Type I/II CompactFlash cards.

The PCM-9587 complies with EBX form factor (Embedded Board eXpandable). It is compact and suitable for embedded applications, yet large enough to contain the functions of a full embedded computer system. The EBX system expansion is based on popular existing industry standards-PC/104™, PCI, and PC/104-Plus™, hence the PC/104-Plus interface on PCM-9587 brings the advantages of a wide variety of embedded system expansion modules. The expandability can also be fulfilled by the MiniPCI socket on the solder side.

1.2 Features

- Embedded Intel® Celeron® M 600 MHz/Celeron® M 1.0 GHz
- Supports ECC DDR memory up to 1 GB, accept 128/256/512/1024 MB DDR200/266 DRAM
- EBX form factor standard and support for PC/104-Plus bus
- Supports 10/100Base-T Ethernet
- Supports up to two channel 36-bit LVDS interface
- Wide temperature optional
- 2 x SATA 150 (RAID 0/1), 4 x COM, 4 x USB 2.0, 8 bit GPIO
- Support PC/104-Plus (PCI + 8-bit ISA), Mini PCI and 1 x PCI Slot

1.3 Specifications

Standard SBC Functions

- **CPU:** Supports onboard Celeron® M processor
- **BIOS**: Award 4 Mbit byte Flash memory
- **System memory:** One 184 pin DIMM sockets, support ECC Double Data Rate (DDR)128 MB to 1 GB, accepts 128/256/512/1000 MB DDR200/266 DRAM.
- System chipset:Intel 852GM GMCH/6300ESB Chipset 400MHz FSB
- **Enhanced IDE interface:** One Enhanced IDE interface supports 2 IDE devices. PIO mode 3 or mode 4, Ultra DMA 100 transfer. 2 Serial ATA standard connector to support SATA 150
- **FDD interface:** Supports one FDD
- **Serial ports:** Three serial RS-232 ports, one serial RS-232/422/485 ports
- **Parallel port:** One parallel port, supports SPP/EPP/ECP mode
- **Keyboard/mouse connector:** Supports standard PS/2 keyboard and a PS/2 mouse
- **Power management:** APM Rev. 1.2 compliant power management ACPI support

Downloaded from www.Manualslib.com manuals search engine

- **Watchdog timer**: Winbond W83627, 255 levels timer interval, setup by software
- **USB**: Four USB 2.0 compliant host ports
- **IrDA:** N/A
- **GPIO:** 8-bit general purpose input/output
- **Expansion:** PC/104 Plus(support 8bit ISA, not support ISA DMA mode), PCI and miniPCI

Solid State Disk

- Supports one 50-pin socket for CFC type I/II

VGA/LCD Interface

- **Chipset:** Intel 852GM
- **Frame buffer:** Optimized Shared Memory Architecture, supports up to 64MB frame buffer using system memory
- **Interface:** 4x AGP VGA/LVDS interface
- **Display mode:** CRT Modes: pixel resolution up to 1600 x 1200 at 85-Hz and 2048 x 1536 at 75-Hz
- **LCD mode:** Dual channel LVDS panel support up to UXGA panel resolution with frequency range from 25-MHz to 112-MHz
- **LVDS:** Supports 2 channel (48-bit) LVDS LCD panel

TV-Out/DVI (TV out optional by request)

- Chipset: Chrontel CH7009
- Supports composite, s-video or RGB output
- Supports NTSC and PAL formats

Ethernet interface

- Chipset:
- Intel 82551ER /82551QM optional
- Ethernet interface:
- IEEE 802.3u 100 BASE-T Fast Ethernet compatible (PCM-9587)
- I/O address switchless setting
- Built-in boot ROM

Audio Function

- **Chipset:** 6300ESB, Audio codec ALC 650
- **Audio controller:** AC'97 3D surround stereo sound
- Supports Speaker out, CD-input, Line-in, Line-out, Microphone

Mechanical and Environmental

- **Dimensions:** (L x W)203 x 146 mm (8" x 5.75")
- **Power supply Voltage:**ATX, with Vcore 2 phase, +5V power only can work
- **Power Requirement:** (Celeron M 600 with 256MB)
- **Max:** 2.63A@ 5V, 0.03A @ 12V
- **Typical:** 2.62A@ 5V, 0.03A @ 12V
- **Operating temperature:**0 ~ 60° C (32~140° F)
- **Operating Humidity:**0% ~ 90% Relative Humidity, non-condensing
- **Weight:** 0.85 kg (weight of total package)

Downloaded from www.Manualslib.com manuals search engine

1.4 Board layout: dimensions

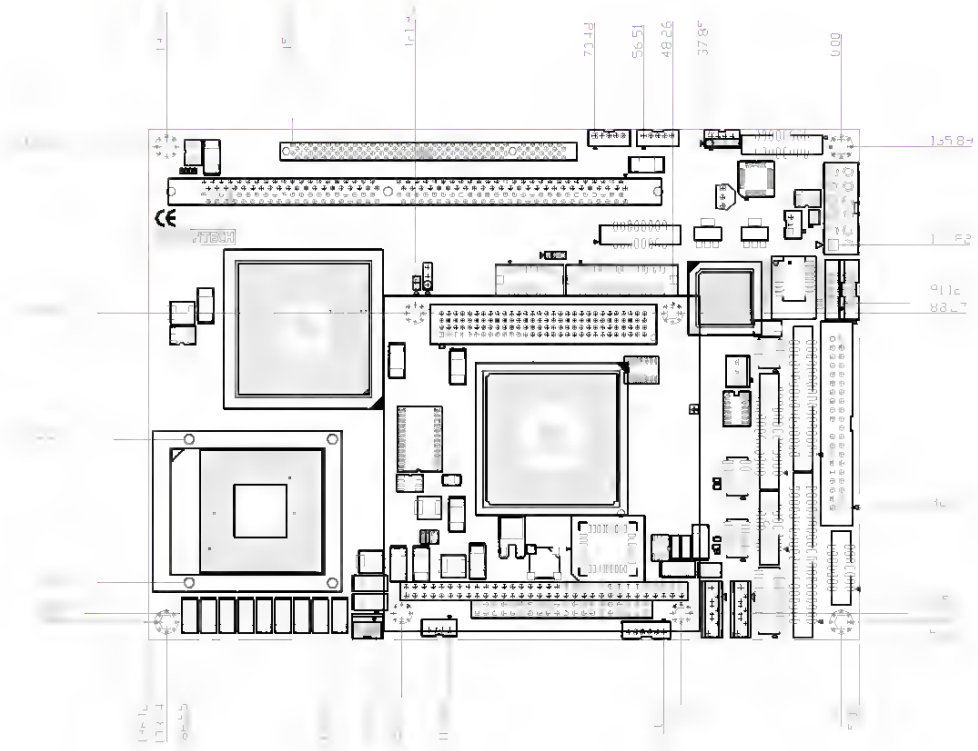


Figure 1.1 Board layout: dimensions (component side)

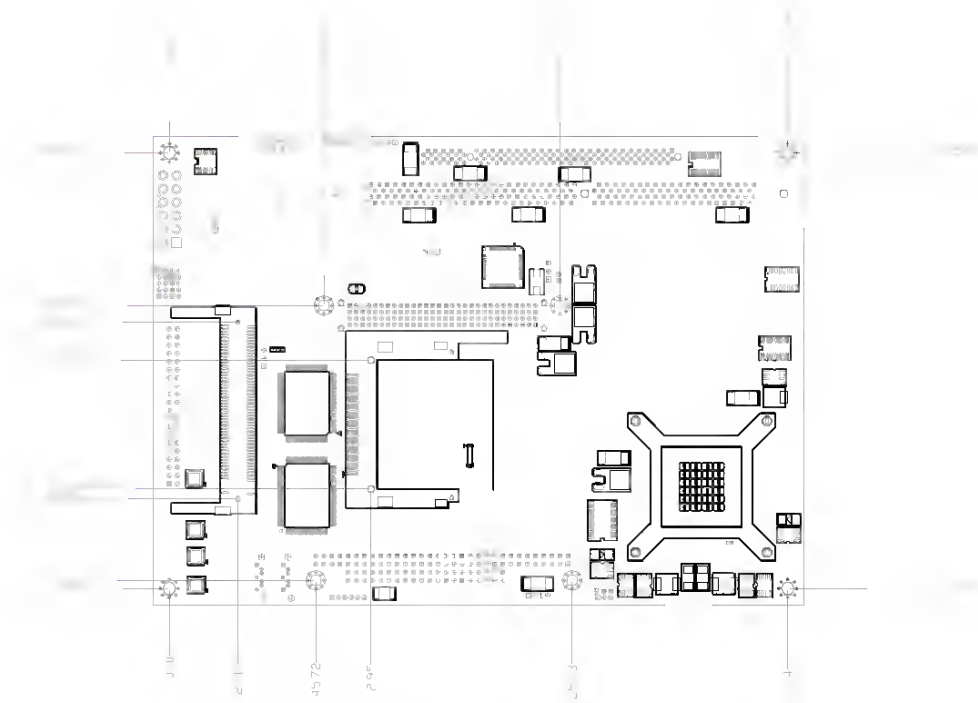


Figure 1.2 Board layout: dimensions (solder side)

Downloaded from www.Manualslib.com manuals search engine

Chapter 2

Installation

This chapter explains the setup procedures of PCM-9587 hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all safety precautions before you begin the installation procedure.

Downloaded from www.Manualslib.com manuals search engine

2.1 Jumpers

The PCM-9587 has a number of jumpers that allow you to configure your system to suit your application. The table below lists the functions of the various jumpers.

Table 2.1: Jumpers

Label	Function
J1	LCD Voltage Select
J2	PC104+ VIO Select
J3	Clear CMOS function Select
J5	COM2 RS232/422/485 function Select

2.1.1 Jumpers setting drawing

Table 2.2: J1: LCD Voltage Select

PIN	FUNCTION
1-2	+3.3 V*
2-3	+5 V

Table 2.3: J2: PC104+ VIO Select

PIN	FUNCTION
1-2	VIO = +5 V *
2-3	VIO = +3.3 V

Table 2.4: J3: Clear CMOS function Select

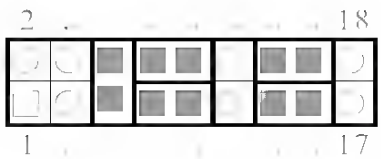
PIN	FUNCTION
1-2 Open	Normal*
1-2 Close	Clear CMOS

Downloaded from www.Manualslib.com manuals search engine

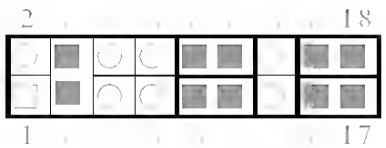
Table 2.5: J5: COM2 RS 232/422/485 Select

PINS	RS-232	RS-422	RS-485
1,2	Open	Open	Close
3,4	Open	Close	Open
5,6	Close	Open	Open
7,9	Close	Open	Open
8,10	Close	Open	Open
9,11	Open	Close	Close
10,12	Open	Close	Close
13,15	Close	Open	Open
14,16	Close	Open	Open
15,17	Open	Close	Close
16,18	Open	Close	Close

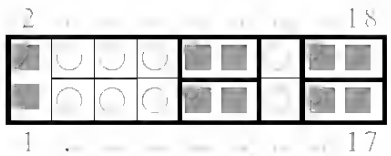
RS-232



RS-422



RS-485



Downloaded from www.Manualslib.com manuals search engine

2.2 Connectors

On-board connectors link the PCM-9587 to external devices such as hard disk drives, a keyboard, or floppy drives. The table below lists the function of each of the board's connectors.

Table 2.6: Connectors

Label	Function
CN1	LCD Backlight connector
CN2	TV-out connector (TV out optional by request)
CN3	CD-IN connector
CN4	Audio output connector
CN5	Power input connector
CN6	-12V and -5V connector
CN7	VGA connector
CN8	LVDS connector
CN9	DVI connector
CN10	Gigabit LAN connector(Optional)
CN11	10/100M LAN connector
CN12	Gigabit LAN led connector(Optional)
CN13	System FAN connector
CN14	Floppy connector
CN15	Primary HDD connector
CN16	Printer port connector
CN17	PC104 and PC104+ connector
CN18	USB port 3/4
CN19	DIO connector
CN20	USB port 1/2
CN21	COM port 1/2/3/4 connector
CN22	Front panel connector
CN23	SATA connector 1
CN24	SATA connector 2
CN25	CPU FAN connector
CN26	Extension SMBUS connector
CN27	KB / Mouse connector
CN28	CPU FAN connector (wafer box)(Optional)
CN29	MINI-PCI connector
CN30	CompactFlash card connector
PCI1	Extension PCI slot

Downloaded from www.Manualslib.com manuals search engine

2.3 Locating jumpers and Connectors

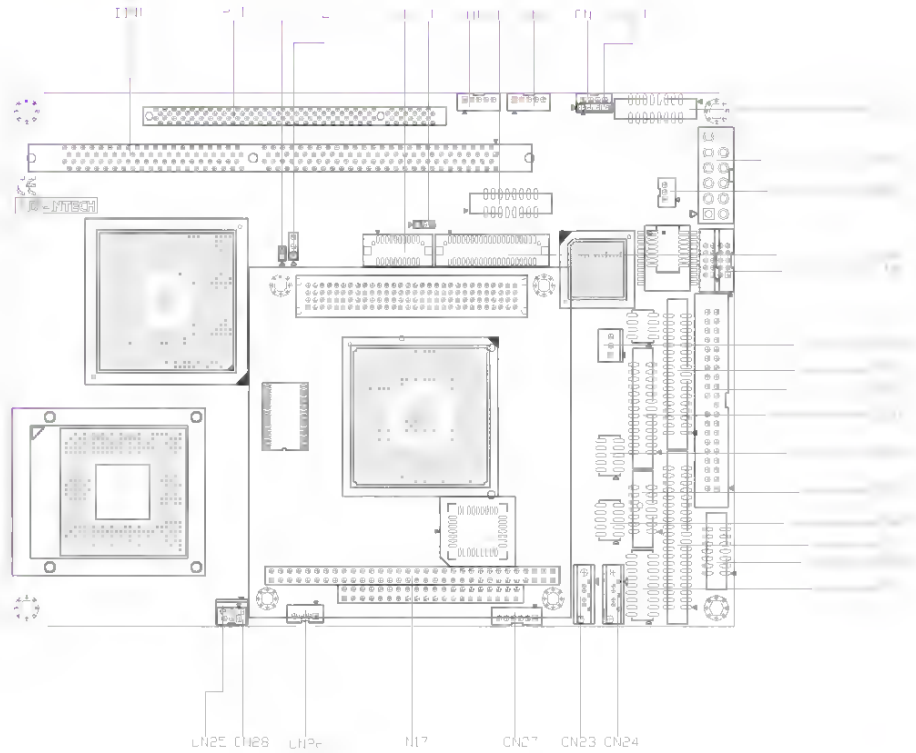


Figure 2.1 Jumper & Connector (component side)

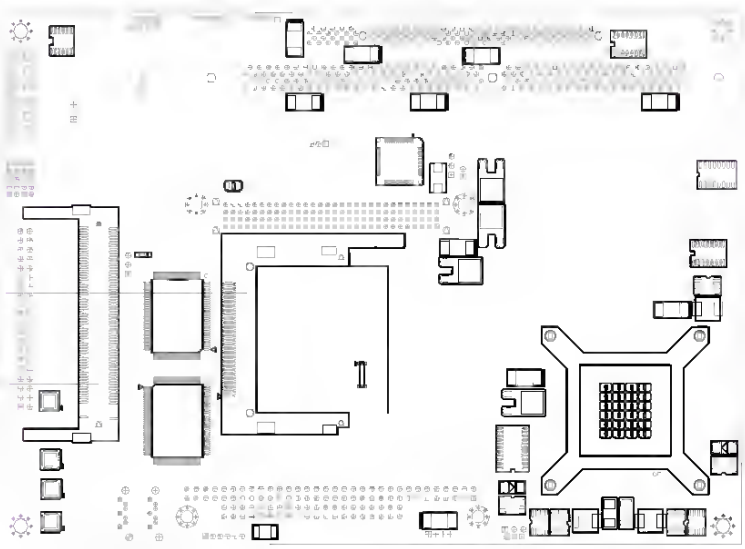
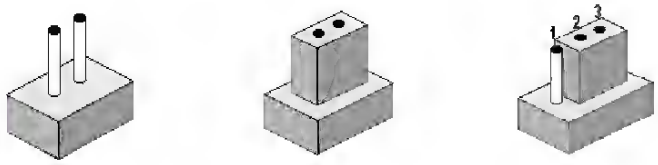


Figure 2.2 Jumper & Connector (solder side)

Downloaded from www.Manualslib.com manuals search engine

2.4 Setting Jumpers

You may configure your card to match the needs of your application by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper, you connect the pins with the clip. To "open" a jumper, you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2, or 2 and 3.



open closed closed 2-3

The jumper settings are schematically depicted in this manual as follows:.

open closed closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

Generally, you simply need a standard cable to make most connections.

2.5 Clear CMOS (J3)

Warning! *To avoid damaging the computer, always turn off the power supply before setting "Clear CMOS." Before turning on the power supply, set the jumper back to "3.0 V Battery On."*

This jumper is used to erase CMOS data and reset system BIOS information.

The procedure for clearing CMOS is:

1. Turn off the system.
2. Push J3.
3. Turn on the system. The BIOS is now reset to its default setting.

Downloaded from www.Manualslib.com manuals search engine

2.6 Installing DIMMs

The procedure for installing DIMMs is described below. Please follow these steps carefully. The number of pins are different on either side of the breaks, so the module can only fit in one way. DIMM modules have different pin contacts on each side, and therefore have a higher pin density.

1. Make sure that the two handles of the DIMM socket are in the "open" position. i.e. The handles remain leaning outward.
2. Slowly slide the DIMM module along the plastic guides on both ends of the socket.
3. Press the DIMM module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the socket.

To **remove** the memory module, just push both handles outward, and the module will be ejected from the socket.

2.7 IDE, CDROM hard drive connector (CN15)

The PCM-9587 provides 1 IDE channels which you can attach up to two Enhanced Integrated Device Electronics hard disk drives or CDROM to the PCM-9587's internal controller. The PCM-9587's IDE controller uses a PCI interface. This advanced IDE controller supports faster data transfer, PIO mode 3, mode 4 and UDMA/100.

2.7.1 Connecting the hard drive

Wire number 1 on the cable is red or blue, and the other wires are gray.

1. Connect one end of the cable to CN15. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable into the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

2.8 Solid State Disk

The PCM-9587 provides a CompactFlash™ card socket.

2.8.1 CompactFlash (CN30)

The CompactFlash card shares a secondary IDE channel which can be enabled/disabled via the BIOS settings.

Downloaded from www.Manualslib.com manuals search engine

2.9 Floppy drive connector (CN14)

You can attach up to two floppy drives to the PCM-9587's on-board controller. This is useful with 34 pin dual FDD cable (part no:1701340603).

You can use any combination of 5.25"(360 KB and 1.2MB) and/or 3.5"(720 KB, 1.44MB, and 2.88 MB) drives. An appropriate 34 pin flat cable is required.

2.9.1 Connecting the floppy drive

1. Plug the 34-pin dual FDD-cable connector into CN14 of PCM-9587 board. Make sure that the red wire corresponds to pin one on the connector.
2. Attach the appropriate connector at the end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to A: drive. The set in the middle connects to the B: drive.

If you are connecting a 3.5" floppy drive, you may have trouble determining which pin is number one. Look for a number printed on the circuit board indicating pin number one. In addition, the connector on the floppy drive may have a slot. When the slot is up, pin number one should be on the right. Check the documentation that came with the drive for more information.

If you desire, connect the B: drive to the connectors in the middle of the cable as described above.

In case you need to make your own cable, you can find the pin assignments for the board's connector in Appendix B.

2.10 Parallel port connector (CN16)

Normally, the parallel port is used to connect the card to a printer. The PCM-9587 includes a multi-mode (ECP/EPP/SPP) parallel port accessed via CN16 and a 26-pin flat-cable connector. You will need an adapter cable if you use a traditional DB-25 connector. The adapter cable has a 26-pin connector on one end, and a DB-25 connector on the other.

The parallel port is designated as LPT1, and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

The parallel port interrupt channel is designated to be IRQ7.

You can select ECP/EPP/SPP DMA channel via BIOS setup.

2.11 Keyboard and PS/2 mouse connector (CN27)

The PCM-9587 board provides a keyboard connector that supports both a keyboard and a PS/2 style mouse. In most cases, especially in embedded applications, a keyboard is not used. If the keyboard is not present, the standard PC/AT BIOS will report an error or fail during power-on self-test (POST) after a reset. The PCM-9587's BIOS standard setup menu allows you to select "All, But Keyboard" under the "Halt On" selection. This allows no-keyboard operation in embedded system applications, without the system halting under POST.

Downloaded from www.Manualslib.com manuals search engine

2.12 Front Panel Connector (CN22)

Next, you may want to install external switches to monitor and control the PCM-9587. These features are optional: install them only if you need them. The Front Panel connector (CN22) is a 14-pin male, dual in-line header. It provides connections for a hard disk access indicator, LAN Act., LAN Link, hardware reset, ATX power ON/OFF switch connector, and power on indicator.

2.12.1 Power & HDD LED (pin 1-4 of CN22)

The HDD LED indicator for hard disk access is an active low signal (24 mA sink rate). Power supply activity LED indicator.

2.12.2 Reset switch (pin 13-14 of CN22)

If you install a reset switch, it should be an open single pole switch. Momentarily pressing the switch will activate a reset. The switch should be rated for 10 mA, 5 V.

2.13 Power connectors (CN25,CN5)

2.13.1 ATX power connector, +5V (CN5)

Supplies main power to the PCM-9587 (+5V) and to devices that require it.

2.13.2 CPU Fan power supply connector (CN25)

Provides power supply +12V to CPU cooling fan, and fan speed detects signal input.

2.14 ATX power ON/OFF switch con. pin 11-12 of CN22

2.14.1 ATX feature (CN5) & soft power switch (CN22)

The PCM-9587 can support an advanced soft power switch function, if an ATX power supply is used. To enable the soft power switch function connect the power on/off button to CN22. (A momentary type of button should be used.)

Note! *Make sure that the ATX power supply can take at least a 10 mA load on the 5 V standby lead (5VSB). If not, you may have difficulty powering on your system.*

Downloaded from www.Manualslib.com manuals search engine

2.15 Audio AC'97 Link interfaces (CN4)

The PCM-9587 is equipped with a high quality audio interface, which provides 16-bit CD-quality recording and playback as well as OPL3 compatible FM music. It is supported by all major operating systems and is completely compatible with Sound Blaster Pro.

2.15.1 Audio connector(CN4)

The PCM-9587 provides all major audio signals on a 16-pin flat-cable connector, CN4. The audio signals include Microphone in (mono), Line in (stereo), Line out (stereo) and Speaker out (stereo). You will need an adapter cable if you use traditional jack connectors for these audio signals.

2.15.2 CD audio-in connector (CN3)

All CD-ROM drives can provide analog audio signal output when used as a music CD player. The CN3 on PCM-9587 is a connector to input CD audio signal into the audio controller. The audio cable of your CD-ROM drive will be used to connect to CN3.

2.16 COM port connector (CN21)

The PCM-9587 provides four RS-232 serial ports (COM1,3,4:RS-232, COM2: RS-232/422/485) in one COM port connector. The COM port connector is a 40-pin, 20*2P 180D(M) 2.0mm, connector. It provides connections for serial devices (a mouse, etc.) or a communication network. You can find the pin assignments for the COM port connector in Appendix C. COM2 can be configured to operate in RS-232,RS-422, or RS-485 mode. This is done via J5.

2.17 VGA/LVDS interface connections (CN7, CN8,CN9)

The PCM-9587's AGP SVGA interface can drive conventional CRT displays and is capable of driving a wide range of LVDS flat panel displays. The board has three connectors to support these displays: one for standard CRT VGA monitors, one for LVDS type LCD panels and one for DVI type LCD panels.

2.17.1 CRT display connector (CN7)

CN7 is a 16-pin, dual-inline header used for conventional CRT displays. A simple one-to-one adapter can be used to match CN7 to a standard 15-pin D-SUB connector commonly used for VGA. Users can drive a standard progressive scan analog monitor with pixel resolution up to 1600 x 1200 at 85 Hz and up to 2048 x 1536 at 75 Hz. Pin assignments for CRT display connector CN7 are detailed in Appendix B.

2.17.2 LVDS LCD panel connector (CN8)

The PCM-9587 uses the Intel 852 GM chipset that supports single- or dual-channel LVDS panel up to UXGA panel resolution with frequency range from 15MHz to 112MHz.

The PCM-9587 supports single or dual-channel LVDS panels up to UXGA panel resolution with frequency range from 25MHz to 112MHz. The display mode can be 2 channel (2 x 18bit) LVDS LCD panel displays, or optional (2 x 24bit) LVDS LCD panel display. Users can connector to either an 18, 24, 36 or 48bit LVDS LCD with CN8

Downloaded from www.Manualslib.com manuals search engine

2.17.3 DVI LCD panel connector(CN9)

Digital Visual Interface (DVI) is the standard interface for high-performance connection between PCs and Flat Panel Displays, Digital CRT displays, Projectors, and HDTV. The PCM-9587 is able to drive a DVI connector display at a pixel resolution up to 1600 x 1200 at 85Hz.

Panel type and Resolution mode selection

Customer can select display type and boot number from BIOS menu selection.

Table 2.7: CN9: DVI connector

PIN	Signal	PIN	Signal
1	C0#	2	VCC_DVI
3	C0	4	CK#
5	GND	6	CK
7	C1#	8	GND
9	C1	10	DVI_CLK
11	GND	12	DVI_DATA
13	C2#	14	HP_DET
15	C2	16	MI2C_DATA
17	VCC_DVI	18	MI2C_CLK
19	NC	20	NC

2.18 TV-out interface (CN2) (TV out optional by request)

The PCM-9587 board provides TV-out function via CN2. This consists of a 5-pin wafer box header. Output supports composite video, S-video and SCART(RBG). TV-out generators use both NTSC and PAL formats.It supports up to 1024 by 768 with full vertical and horizontal underscan capability.

To set up your video interface run the appropriate installation program located on the utility disk.

2.19 Ethernet configuration (CN11)

The PCM-9587 is equipped with a high performance 32-bit PCI-bus Ethernet interface which is fully compliant with IEEE 802.3U 10/100Mbps CSMA/CD standards. It is supported by all major network operating systems.

2.19.1 100Base-T connector (CN11)

10/100Base-T connects to the PCM-9587 via an adapter cable to a 10-pin polarized header (CN11).

2.19.2 Network boot

The Network Boot feature can be utilized by incorporating the Boot ROM image files for the appropriate network operating system. The Boot ROM BIOS files are included in the system BIOS, which is on the utility CD disc.

Downloaded from www.Manualslib.com manuals search engine

2.20 USB connectors (CN18,CN20)

The PCM-9587 board provides up to four USB (Universal Serial Bus) 2.0 ports. This gives complete Plug and Play, and hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification Rev. 1.1, and are fuse protected.

The PCM-9587 support three 5 x2 pin header connector for USB1,2 (CN20), USB3,4(CN18). You will need an USB cable if you use USB connectors. The USB interfaces can be disabled in the system BIOS setup.

Table 2.8: CN18: USB port 3/4

PIN	Signal	PIN	Signal
1	VCC	2	VCC
3	DAT2-	4	DAT3-
5	DAT2+	6	DAT3+
7	GND	8	GND
9	GND	10	NC

Table 2.9: CN20: USB PORT 1/2

PIN	Signal	PIN	Signal
1	VCC	2	VCC
3	DAT0-	4	DAT1-
5	DAT0+	6	DAT1+
7	GND	8	GND
9	GND	10	NC

2.21 LCD Backlight connector (CN1)

The LCD inverter is connected to CN1 via a 5-pin connector to provide +5V/+12V power.

2.22 SATA Connector (CN23, CN24)

PCM-9587 can support Serial ATA by two COMAX C504C connectors (SA1, SA2), data transfer rates up to 150 Mbyte/s, enabling very fast data and file transfer, and independent DMA operation on two ports. It also supports alternate Device ID and RAID Class Code option for support of Soft RAID.

2.23 DIO connector (CN19)

The PCM-9587 supports DIO interface by CN19, which is a 7 x 2 dual line pin header, supply 8 general purpose input or output ports.

2.24 -12V and -5V connector (CN6)

Supply -5V/-12V for ISA/PCI device.

2.25 Extension SMBUS connector (CN26)

4-pin connector reserved for extra SMBus device.

Downloaded from www.Manualslib.com manuals search engine

2.26 System FAN connector (CN13)

The board supports one system housing cooling fan connector on the motherboard. The connector is 3-pin headers and support fan speed monitoring. A temperature monitor detects the internal system temperatures, which is displayed in the PC Health section of the CMOS Setup Utility.

Table 2.10: CN13: System FAN connector

PIN	Signal
1	GND
2	+12V
3	Detection

Note! *PCM-9587 ISA bus only support 8 bit.*

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

Chapter 3

Software Configuration

This chapter details the software configuration information. It shows you how to configure the card to match your application requirements. The AWARD System BIOS is covered in Chapter 4.

Sections include:

- Introduction
- Connections for standard LCDs
- Ethernet interface configuration.

Downloaded from www.Manualslib.com manuals search engine

3.1 Introduction

The PCM-9587 system BIOS and custom drivers are located in a 512 Kbyte, Flash ROM device, designated U6. A single Flash chip holds the system BIOS, VGA BIOS and network Boot ROM image. The display can be configured via CMOS settings. This method minimizes the number of chips and difficulty of configuration. To set different types of LCD panels, please choose "panel type" from the "integrated peripherals" menu in CMOS setup.

3.2 Connections to Standard LCDs

The following tables illustrate typical LCD connection pinouts for the PCM-9587.

3.2.1 LG LM150X06 (1024x768(16 colors) LVDS LCD)

Table 3.1: Connections to LCD/ Flat Panel (CN8)

LCD Connector		Flat Panel Connector	
Unipac-UB104S01		**DF-13 40P**	
Pin	**Signal**	**Pin**	**Signal**
1	VCC	1	3.3V
2	VCC	2	3.3V
3	GND	3	GND
4	GND	4	GND
5	RxIN0-	7	LVDS_YAM0R
6	RxIN0+	9	LVDS_YAP0R
7	GND	11	GND
8	RxIN1-	13	LVDS_YAM1R
9	RxIN1+	15	LVDS_YAP1R
10	GND	17	GND
11	RxIN2-	19	LVDS_YAM2R
12	RxIN2+	21	LVDS_YAP2R
13	GND	23	GND
14	CKIN-	25	LVDS-CLKAMR
15	CKIN+	27	LVDS-CLKAPR
16	GND	29	GND
17	NC		
18	NC		
19	GND	33	GND
20	GND	34	GND

* LCD connector type: HRS DF 19K-20P-1H or compatible

Downloaded from www.Manualslib.com manuals search engine

Chapter 4

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

Downloaded from www.Manualslib.com manuals search engine

4.1 System test and initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

press <F1> to RESUME

Write down the message and press the F1 key to continue the bootup sequence.

4.1.1 System configuration verification

These routines check the current system configuration against the values stored in the board's CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The PCM-9587 Series' CMOS memory has an integral lithium battery backup. The battery backup should last ten years in normal service, but when it finally runs down, you will need to replace the complete unit.

4.2 Award BIOS setup

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

4.2.1 Entering setup

Power on the computer and press <Del> immediately. This will allow you to enter Setup.

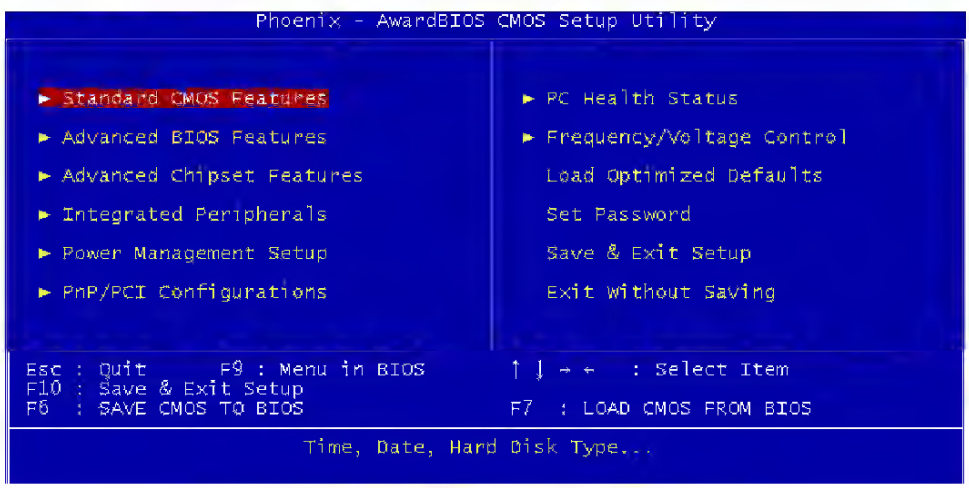

Phoenix - AwardBIOS CMOS Setup Utility
► Standard CMOS Features
► Advanced BIOS Features
► Advanced Chipset Features
► Integrated Peripherals
► Power Management Setup
► PnP/PCI Configurations
► PC Health Status
► Frequency/Voltage Control
Load Optimized Defaults
Set Password
Save & Exit Setup
Exit Without Saving
Esc : Quit F9 : Menu in BIOS
F10 : Save & Exit Setup
F8 : SAVE CMOS TO BIOS
↑ ↓ → ← : Select Item
F7 : LOAD CMOS FROM BIOS
Time, Date, Hard Disk Type...

Figure 4.1 BIOS setup program initial screen

Downloaded from www.Manualslib.com manuals search engine

4.2.2 Standard CMOS Features setup

When you choose the Standard CMOS Features option from the Initial Setup Screen menu, the screen shown below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.

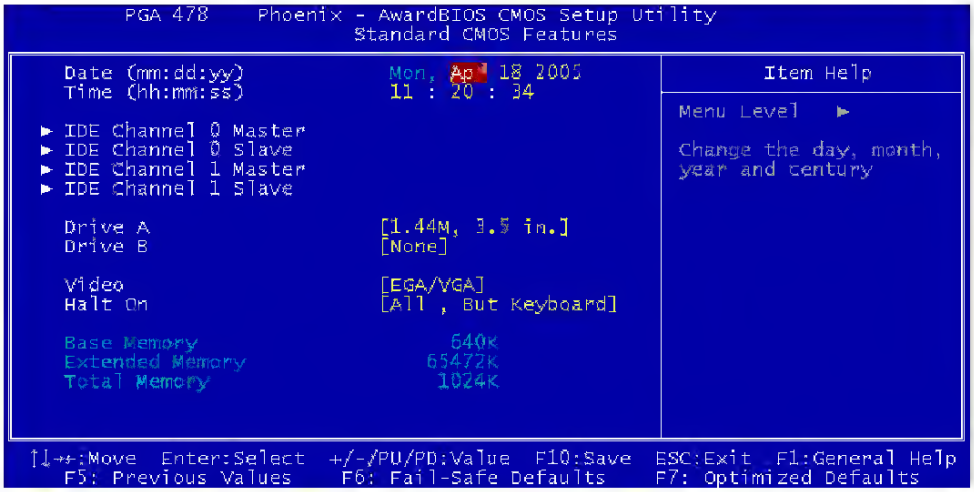

PGA 478 Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date (mm:dd:yy) Mon, Apr 18 2005
Time (hh:mm:ss) 11 : 20 : 34
► IDE Channel 0 Master
► IDE Channel 0 Slave
► IDE Channel 1 Master
► IDE Channel 1 Slave
Drive A [1.44M, 3.5 in.]
Drive B [None]
Video [EGA/VGA]
Halt On [All , But Keyboard]
Base Memory 640K
Extended Memory 65472K
Total Memory 1024K
Item Help
Menu Level ►
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Figure 4.2 CMOS Features setup

4.2.3 Advanced BIOS Features setup

By choosing the Advanced BIOS Features Setup option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-9587 Series.

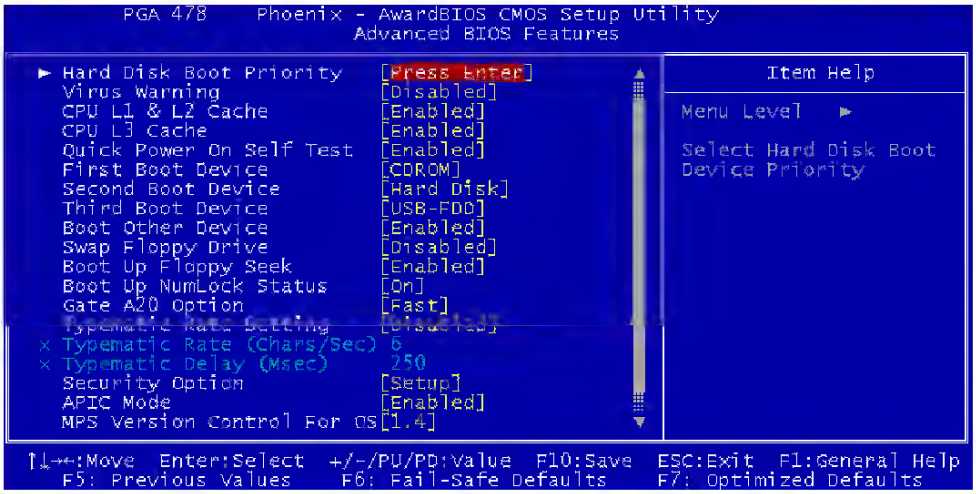

PGA 478 Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
► Hard Disk Boot Priority [Press Enter]
Virus Warning [Disabled]
CPU L1 & L2 Cache [Enabled]
CPU L3 Cache [Enabled]
Quick Power On Self Test [Enabled]
First Boot Device [CDROM]
Second Boot Device [Hard Disk]
Third Boot Device [USB-FDD]
Boot Other Device [Enabled]
Swap Floppy Drive [Disabled]
Boot Up Floppy Seek [Enabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
x Typematic Rate (Chars/Sec) 6
x Typematic Delay (Msec) 250
Security Option [Setup]
APIC Mode [Enabled]
MPS Version Control For OS [1.4]
Item Help
Menu Level ►
Select Hard Disk Boot Device Priority
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Figure 4.3 Advanced BIOS Features setup

Downloaded from www.Manualslib.com manuals search engine

4.2.4 Advanced Chipset Features setup

By choosing the Advanced Chipset Features option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-9587 Series.

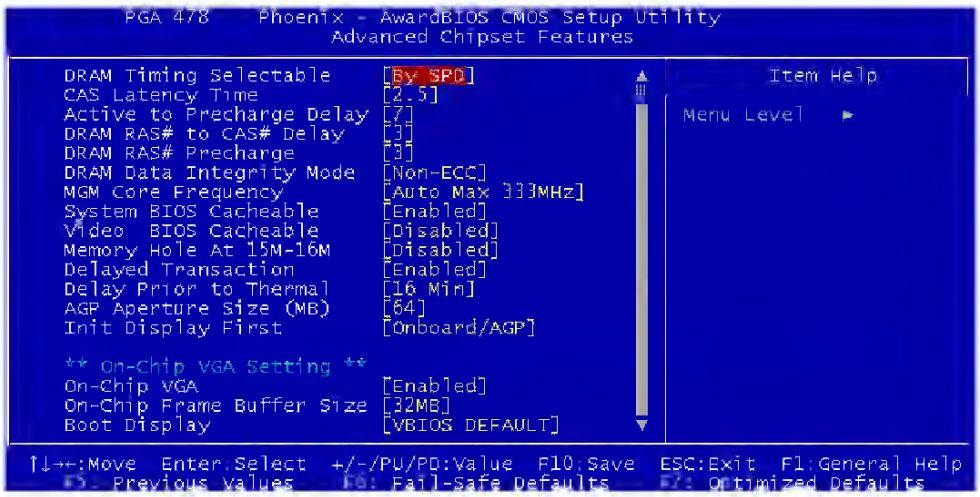

PGA 478 Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features
DRAM Timing Selectable [By SPD]
CAS Latency Time [2.5]
Active to Precharge Delay [7]
DRAM RAS# to CAS# Delay [3]
DRAM RAS# Precharge [3]
DRAM Data Integrity Mode [Non-ECC]
MGM Core Frequency [Auto Max 333MHz]
System BIOS Cacheable [Enabled]
Video BIOS Cacheable [Disabled]
Memory Hole At 15M-16M [Disabled]
Delayed Transaction [Enabled]
Delay Prior to Thermal [16 Min]
AGP Aperture Size (MB) [64]
Init Display First [Onboard/AGP]
** On-Chip VGA Setting **
On-Chip VGA [Enabled]
On-Chip Frame Buffer Size [32MB]
Boot Display [VBIOS DEFAULT]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Figure 4.4 Advanced Chipset Features setup

4.2.5 Integrated Peripherals

Choosing the Integrated Peripherals option from the Initial Setup Screen menu should produce the screen below. Here we see the manufacturer's default values for the PCM-9587 Series.

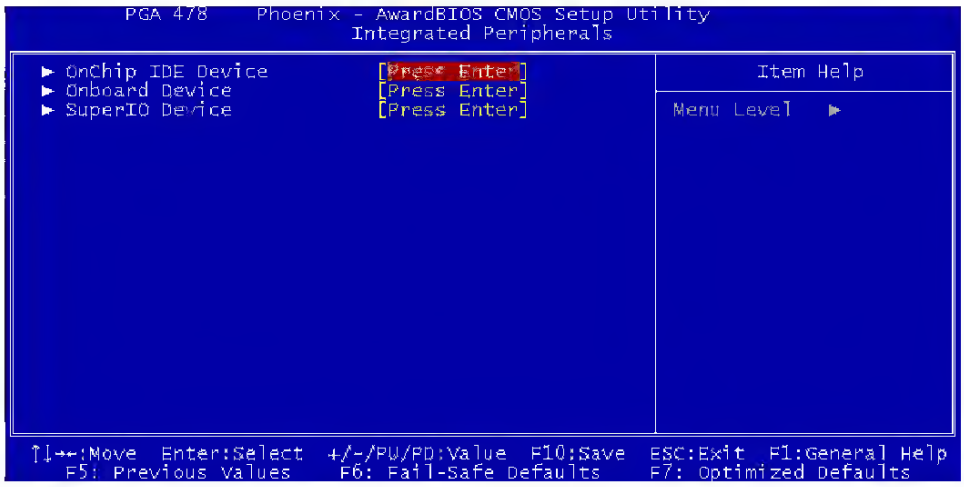

PGA 478 Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
▶ OnChip IDE Device [Press Enter]
▶ Onboard Device [Press Enter]
▶ SuperIO Device [Press Enter]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Figure 4.5 Integrated Peripherals

Downloaded from www.Manualslib.com manuals search engine

4.2.6 Power Management Setup

By choosing the Power Management Setup option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-9587 Series.

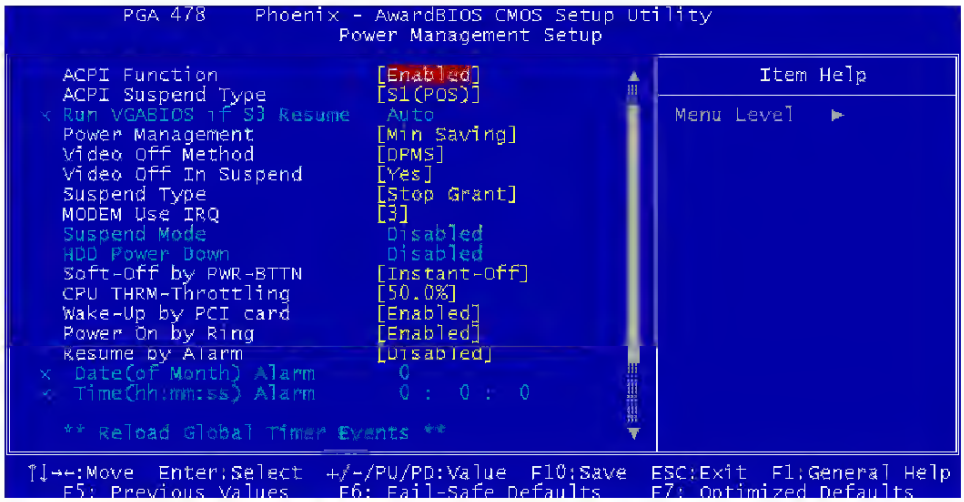

PGA 478 Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI Function [Enabled]
ACPI Suspend Type [S1(POS)]
x Run VGABIOS if S3 Resume Auto
Power Management [Min Saving]
Video Off Method [DPMS]
Video Off In Suspend [Yes]
Suspend Type [Stop Grant]
MODEM Use IRQ [3]
Suspend Mode Disabled
HDD Power Down Disabled
Soft-Off by PWR-BTTN [Instant-Off]
CPU THRM-Throttling [50.0%]
Wake-Up by PCI card [Enabled]
Power On by Ring [Enabled]
Resume by Alarm [Disabled]
x Date(of Month) Alarm 0
x Time(hh:mm:ss) Alarm 0 : 0 : 0
** Reload Global Timer Events **
Item Help
Menu Level ►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Figure 4.6 Power Management Setup

4.2.7 PnP/PCI Configurations

By choosing the PnP/PCI Configurations option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-9587 Series.

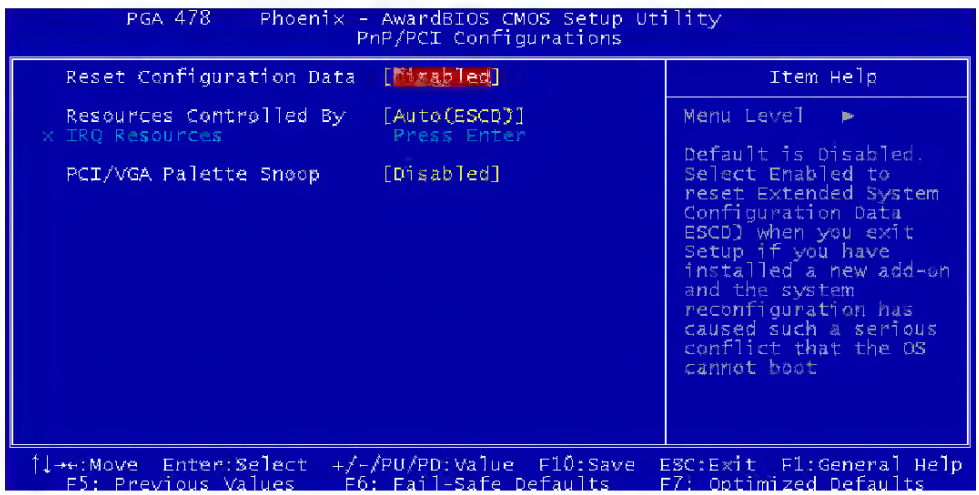

PGA 478 Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
x IRQ Resources Press Enter
PCI/VGA Palette Snoop [Disabled]
Item Help
Menu Level ►
Default is Disabled. Select Enabled to reset Extended System Configuration Data ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Figure 4.7 PnP/PCI Configurations

Downloaded from www.Manualslib.com manuals search engine

4.2.8 PC Health Status

The PC Health Status option displays information such as CPU and motherboard temperatures, fan speeds, and core voltage.

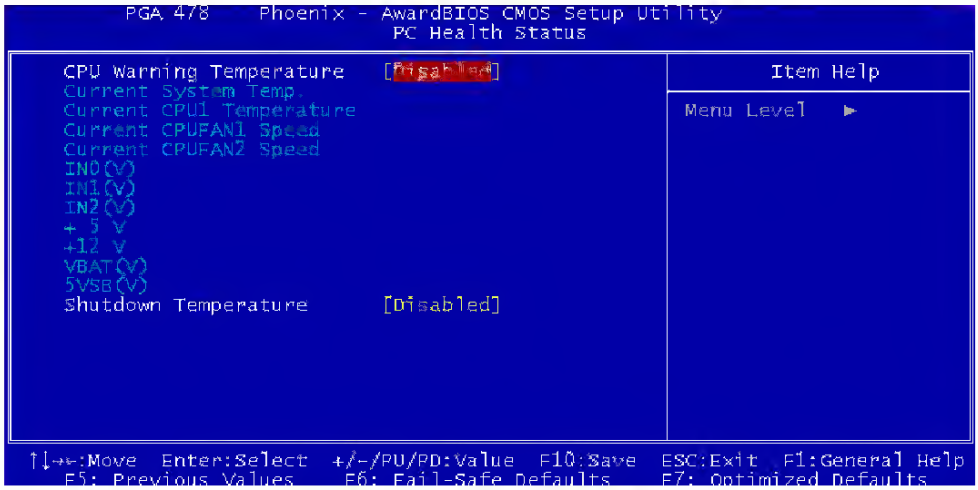


Figure 4.8 PC Health Status

4.2.9 Frequency/Voltage Control

By choosing the Frequency/Voltage Control option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-9587.

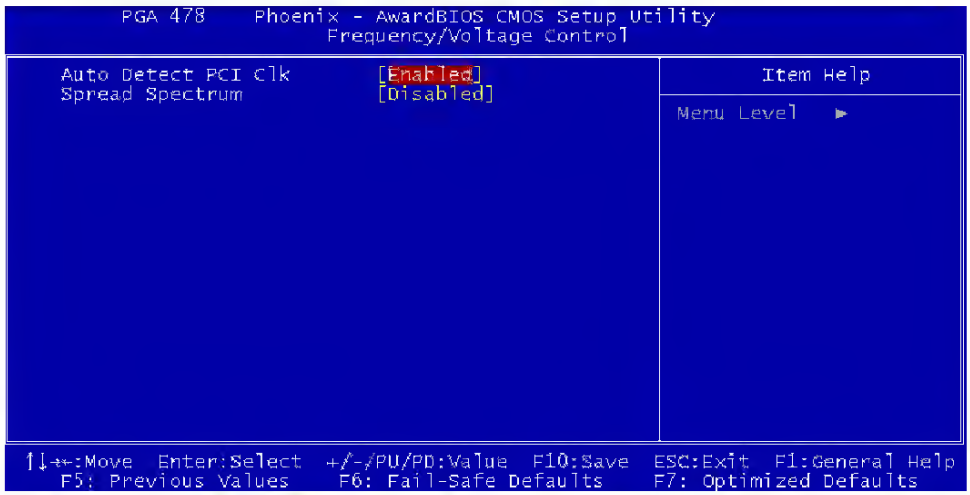

PGA 478 Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control
Auto Detect PCI Clk [Enabled]
Spread Spectrum [Disabled]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Figure 4.9 Frequency/Voltage Control

Caution! *Incorrect settings in Frequency/Voltage Control may damage the system CPU, video adapter, or other hardware.*

Downloaded from www.Manualslib.com manuals search engine

4.2.10 Load Optimized Defaults

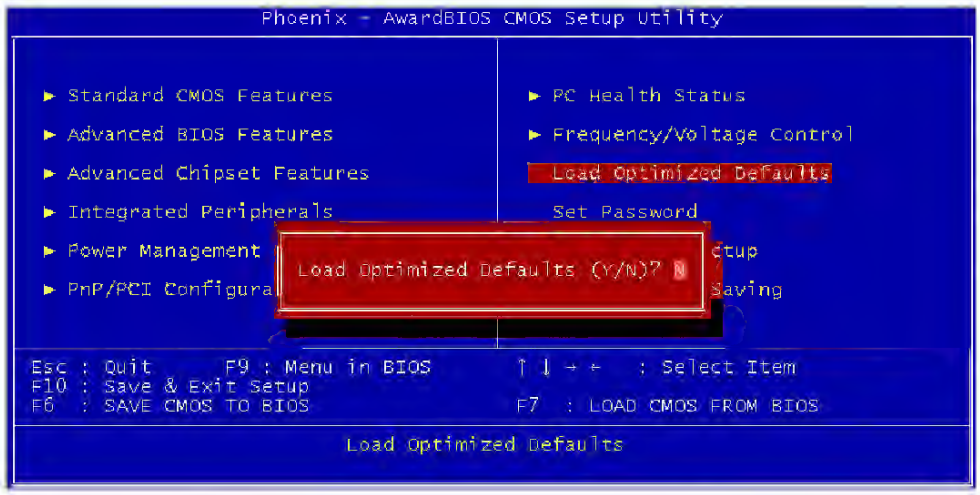

Phoenix - AwardBIOS CMOS Setup Utility
► Standard CMOS Features
► Advanced BIOS Features
► Advanced Chipset Features
► Integrated Peripherals
► Power Management
► PnP/PCI Configura
► PC Health Status
► Frequency/Voltage Control
Load Optimized Defaults
Set Password
Load Optimized Defaults (Y/N)? N
Esc : Quit F9 : Menu in BIOS
F10 : Save & Exit Setup
F6 : SAVE CMOS TO BIOS
↑ ↓ → ← : Select Item
F7 : LOAD CMOS FROM BIOS
Load Optimized Defaults

Figure 4.10 Load Optimized Defaults

Load Optimized Defaults loads the default system values directly from ROM. If the stored record created by the Setup program should ever become corrupted (and therefore unusable), these defaults will load automatically when you turn the PCM-9587 Series system on.

4.2.11 Set Password

Note! *To enable this feature, you should first go to the Advanced BIOS Features menu, choose the Security Option, and select either Setup or System, depending on which aspect you want password protected. Setup requires a password only to enter Setup. System requires the password either to enter Setup or to boot the system.*

A password may be at most 8 characters long.

To Establish Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password," enter the desired password and press <Enter>.
3. At the "Confirm Password" prompt, retype the desired password, then press <Enter>.
4. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

Downloaded from www.Manualslib.com manuals search engine

To Change Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password," enter the existing password and press <Enter>.
3. You will see "Confirm Password" Type it again, and press <Enter>.
4. Select Set Password again, and at the "Enter Password" prompt, enter the new password and press <Enter>.
5. At the "Confirm Password" prompt, retype the new password, and press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Disable Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password," enter the existing password and press <Enter>.
3. You will see "Confirm Password." Type it again, and press <Enter>.
4. Select Set Password again, and at the "Enter Password" prompt, don't enter anything; just press <Enter>.
5. At the "Confirm Password" prompt, again don't type in anything; just press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

4.3 Save & Exit Setup

If you select this option and press <Y> then <Enter>, the values entered in the setup utilities will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn your system on and use the settings to configure the system. This record is required for the system to operate.

4.3.1 Exit Without Saving

Selecting this option and pressing <Enter> lets you exit the Setup program without recording any new values or changing old ones.

Downloaded from www.Manualslib.com manuals search engine

Chapter 5

PCI Graphic

Sections include:

- Introduction
- Installation of PCI Graphic drivers - for Windows 2000/XP
- Further information

Downloaded from www.Manualslib.com manuals search engine

5.1 Introduction

The PCM-9587 has an onboard PCI/AGP flat panel/VGA interface. The specifications and features are described as follows:

5.1.1 Chipset

The PCM-9587 uses a Intel Montara-GM/GM+ GMCH chipset for its graphic controller. It supports LVDS LCD displays, conventional analog CRT monitors, DVI connection, and TV-out function.

5.1.2 Display memory

The Intel Montara-GM/GM+ GMCH chip can support up to 64MB frame buffer shared with system memory; the VGA controller can drive CRT displays up to 1600 x 1200 at 85-Hz and 2048 x 1536 at 75-Hz, color panel displays in LVDS model with resolutions up to UGXA panel resolution with frequency range from 25 MHz to 112 MHz, or DVI model at a pixel resolution up to 1600 x 1200 at 85 Hz.

5.1.3 Display types

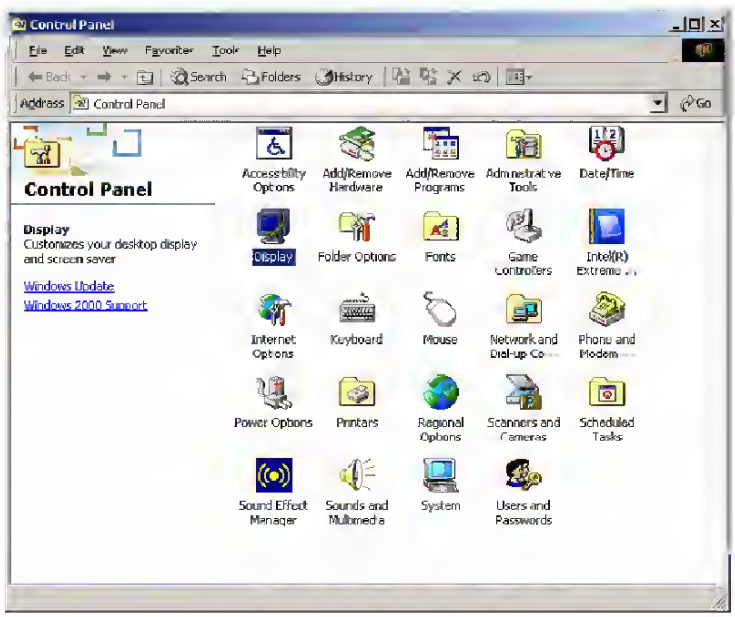
CRT and panel displays can be used simultaneously. The PCM-9587 can be set in one of six configurations: CRT only, LVDS only, both CRT and LFP (LVDS), EFP (DVO to DVI), TV, both CRT and EFP (DVO to DVI). The system is initially set to simultaneous display mode - CRT and LFP (LDVS). If you want to enable other display mode, please set up manually. Set up example is shown as in the following chapters.

5.1.4 Dual/Simultaneous Display

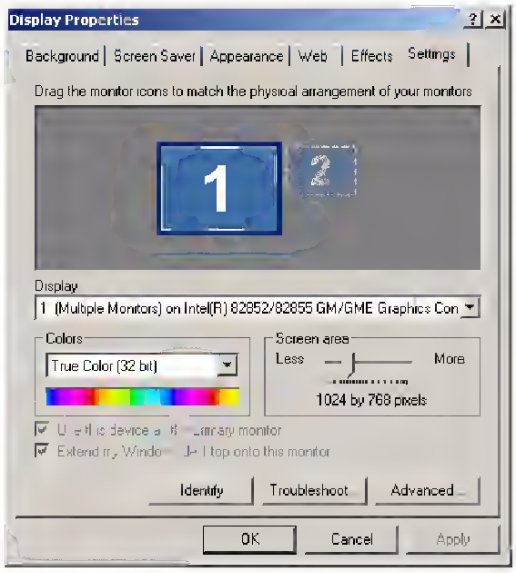
The PCM-9587 uses a Intel Montara-GM/GM+ GMCH Chrontel 7009 controller that is capable of providing simultaneous dual view display of the same content on a flat panel and CRT.

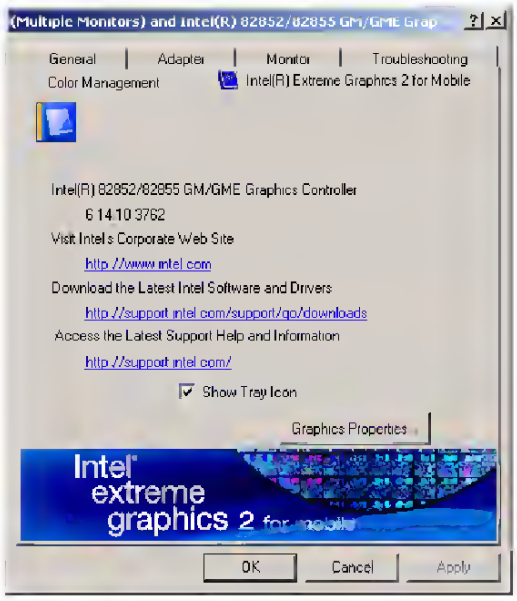
To set up dual view (simultaneous mode) under Windows NT/2000/XP, follow these steps:

1. Open the Control panel, and select “Display”.
2. Select “Settings”.
3. Select "Advanced", "Graphic Properties."
4. Select "Devices" mode and click "OK".

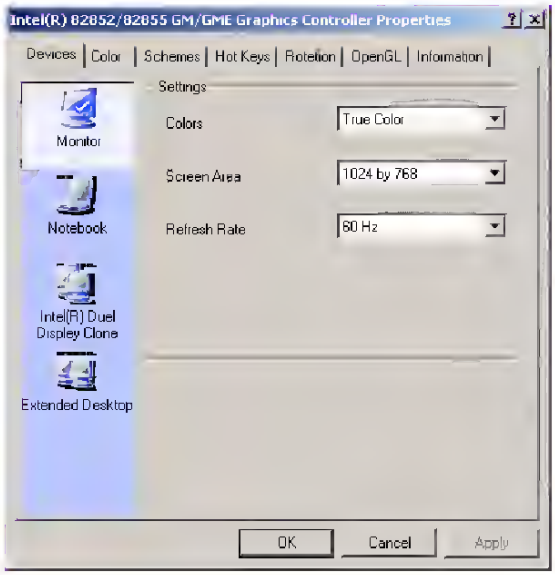


Downloaded from www.Manualslib.com manuals search engine





Downloaded from www.Manualslib.com manuals search engine



5.2 Installation of the PCI Graphic driver

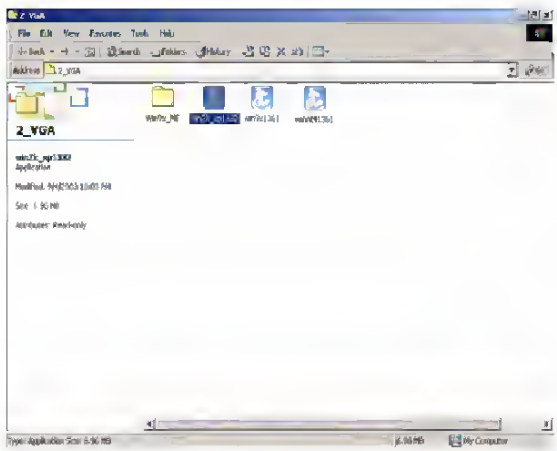
Complete the following steps to install the PCI graphic driver. Follow the procedures in the flow chart that apply to the operating system that you are using within your PCM-9587.

Note!

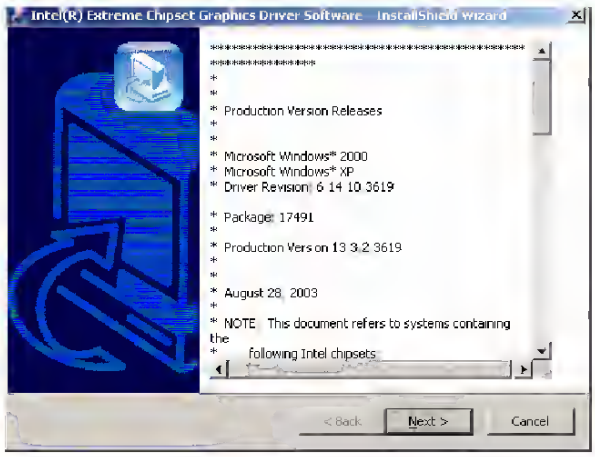
1. *The windows illustrations in this chapter are intended as examples only. Please follow the listed steps, and pay attention to the instructions which appear on your screen.*
2. *For convenience, the CD-ROM drive is designated as "D" throughout this chapter.*

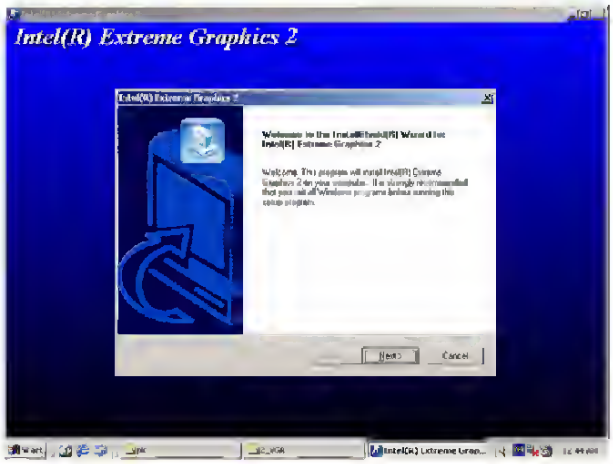
5.2.1 Installation for Windows 2000/XP

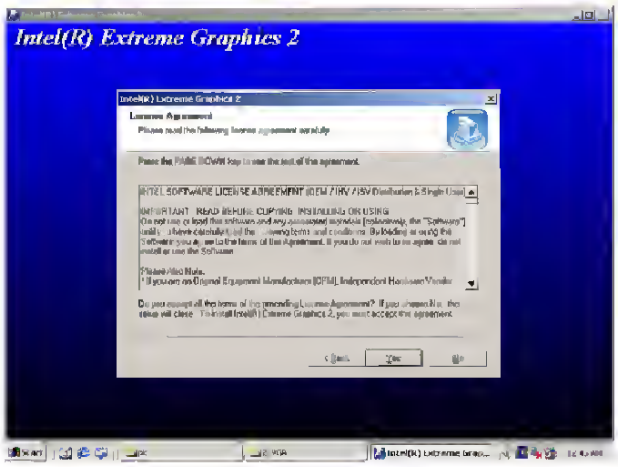
To install PCI Graphic driver for Windows 2000/XP, please run the set up wizard "Intel Extreme Graphic 2" in CD-ROM. Example of installation steps is shown as bellow:



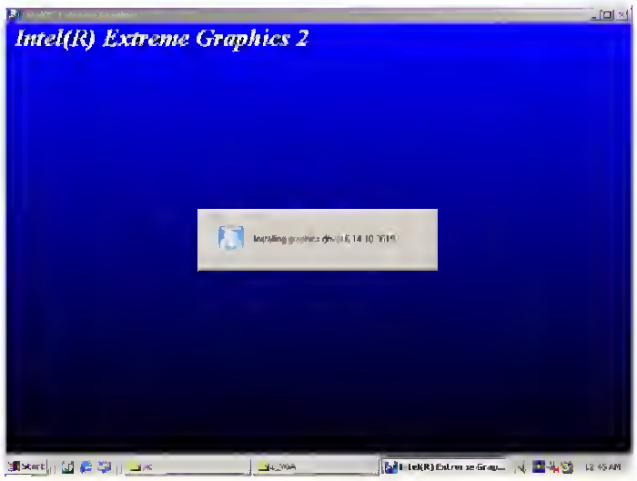
Downloaded from www.Manualslib.com manuals search engine

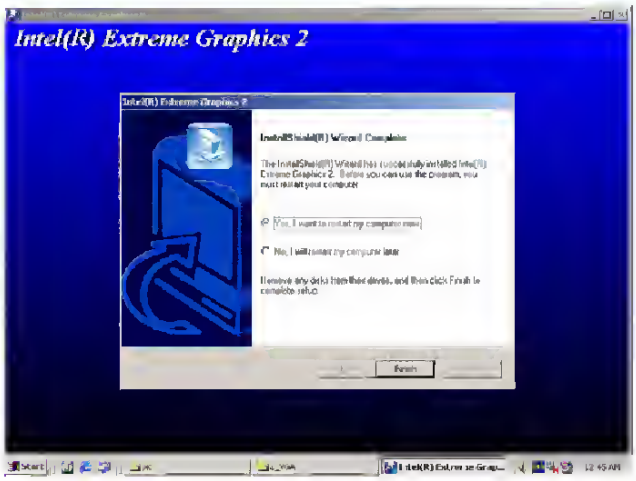

Intel(R) Extreme Chipset Graphics Driver Software - InstallShield wizard
* Production Version Releases
* Microsoft Windows* 2000
* Microsoft Windows* XP
* Driver Revision 6.14.10.3619
* Package 17491
* Production Version 13.3.2.3619
* August 28, 2003
* NOTE: This document refers to systems containing the
* following Intel chipsets
< Back
Next >
Cancel





Downloaded from www.Manualslib.com manuals search engine





5.3 Further Information

For further information about the AGP/VGA installation in your PCM-9587, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

Advantech websites: www.advantech.com
www.advantech.com.tw

Downloaded from www.Manualslib.com manuals search engine

Chapter 6

Audio Setup

The PCM-9587 is equipped with an audio interface that records and plays back CD-quality audio. This chapter provides instructions for installing the software drivers included on the audio driver diskettes.

Downloaded from www.Manualslib.com manuals search engine

6.1 Introduction

The PCM-9587's on-board audio interface provides high-quality stereo sound and FM music synthesis (ESFM) by using the Intel 6300ESB audio controller. The audio interface can record, compress, and play back voice, sound, and music with built-in mixer control.

6.2 Driver installation

6.2.1 Before you begin

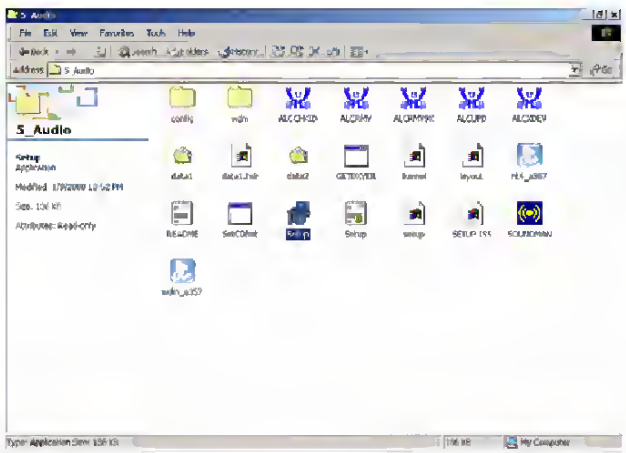
Please read the instructions in this chapter carefully before you attempt installation. The audio drivers for the PCM-9587 board are located on the audio driver CD. Run the supplied SETUP program to install the drivers; don't copy the files manually.

Note!

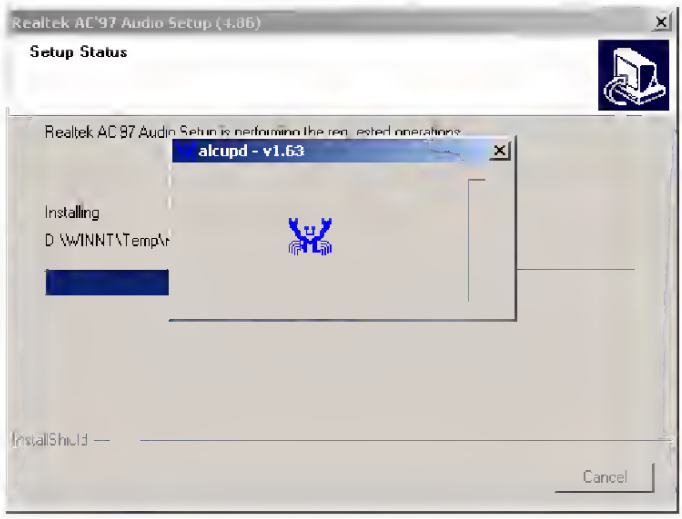
1. *Note1: Before trying to install the driver, go to Chapter 3 to use the "Chipset Software Installation Utility " first.*
2. *The files on the software installation diskette are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.*

6.2.2 Windows 2000/XP drivers

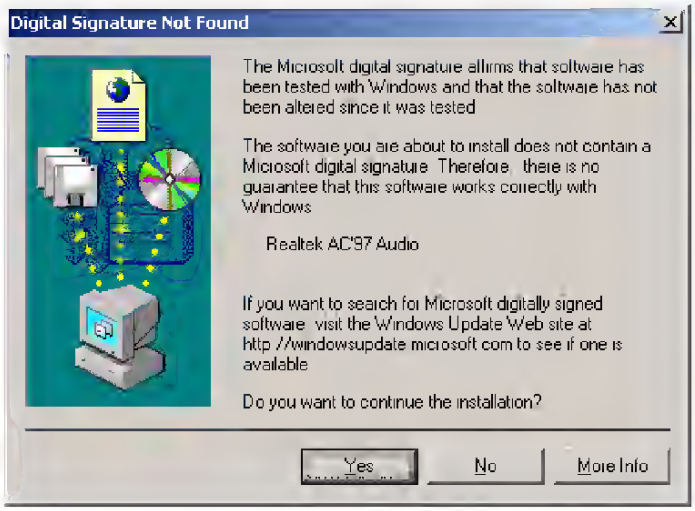
1. To install Audio driver for Windows 2000/XP, please run the set up wizard "Install Shield Wizard for Realtek AC'97 Audio" in CD-ROM. Example of installation steps is shown as bellow.



Downloaded from www.Manualslib.com manuals search engine

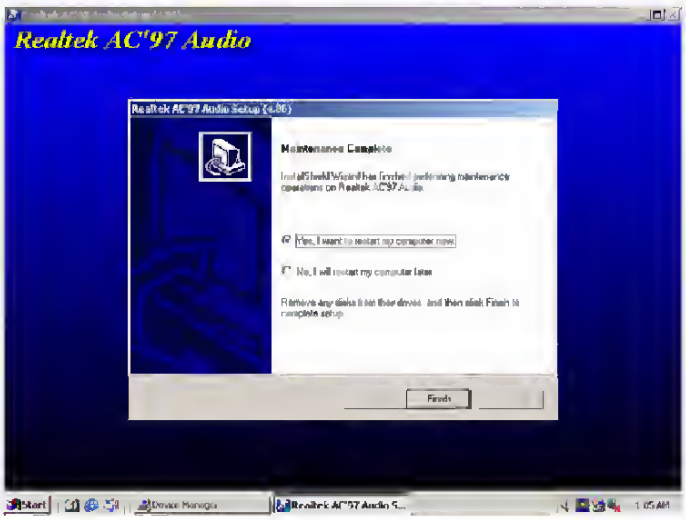


2. In the Hardware Update Wizard window, click "Next".


Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows
Realtek AC'97 Audio
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available
Do you want to continue the installation?
Yes
No
More Info

Downloaded from www.Manualslib.com manuals search engine

3. In the following Hardware Update Wizard window, click "Finish" for Windows to complete audio driver installation.



Downloaded from www.Manualslib.com manuals search engine

Chapter 7

LAN Configuration

Sections include:

- Introduction
- Features
- Installation of Ethernet Driver for
  - Windows 2000 Drivers Setup Steps
  - Windows NT Drivers Setup Steps
  - Windows Wake-on-LAN Setup

Downloaded from www.Manualslib.com manuals search engine

7.1 Introduction

The PCM-9587 is equipped with a high-performance 32-bit Ethernet chipset which is fully compliant with IEEE 802.3 100 Mbps CSMA/CD standards. It is supported by major network operating systems. It is also both 100Base-T and 10Base-T compatible.

7.2 Features

- Intel® 82551ER 10/100Base-T Ethernet LAN controller
- Supports Wake-on-LAN remote control function.(Only support via Intel® 82551QM)
- PCI Bus Master complies with PCI Rev. 2.2
- Complies with 100Base-TX, and 10Base-T applications.
- Single RJ-45 connector gives auto-detection of 10 Mbps or 100 Mbps network data transfer rates and connected cable types.
- Enhancements on ACPI & APM.
- Complies with PCI Bus Power Management Interface Rev. 1.1,
- ACPI Rev. 2.0, and Device Class Power Management Rev. 1.0.

7.3 Installation of Ethernet Driver

Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your PCM-9587, and then refer to the corresponding installation procedure. Then just follow the steps described. You will quickly and successfully complete the installation, even if you are not familiar with instructions for Windows.

Note! *The windows illustrations in this chapter are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.*

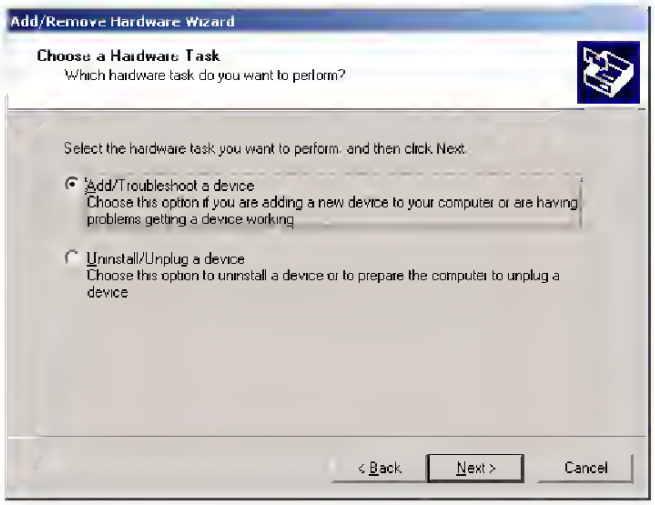
7.3.1 Installation for Windows 2000

1. a.Select "Start", "Settings". "Control Panel".
   b. Double click "Network".

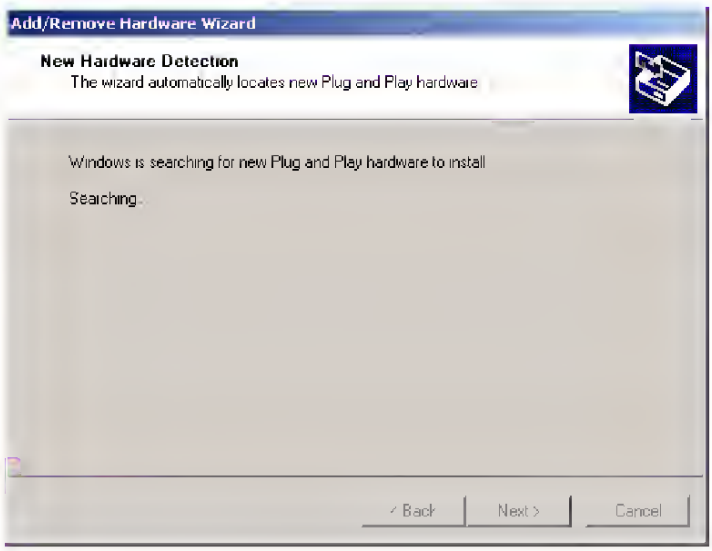
Downloaded from www.Manualslib.com manuals search engine

2. Click "Add new hardware wizard" and prepare to install networkfunction

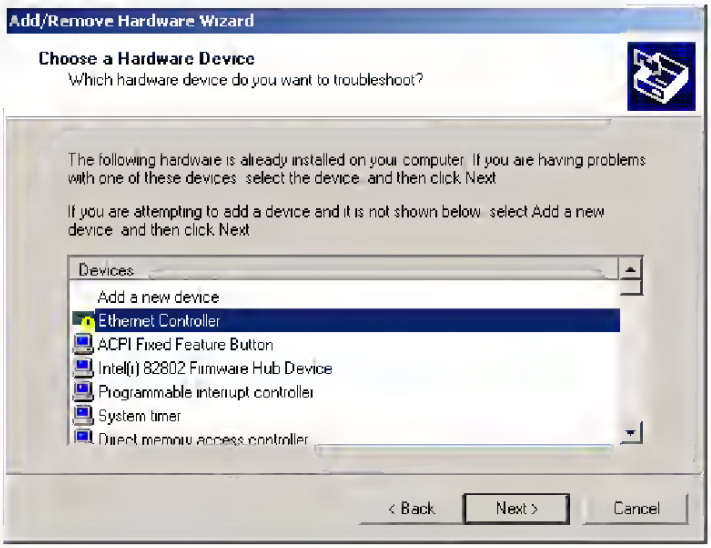
Add/Remove Hardware Wizard
Welcome to the Add/Remove Hardware Wizard
This wizard helps you add, remove, unplug, and troubleshoot your hardware
To continue, click Next
< Back
Next >
Cancel


Add/Remove Hardware Wizard
Choose a Hardware Task
Which hardware task do you want to perform?
Select the hardware task you want to perform, and then click Next.
Add/Troubleshoot a device
Choose this option if you are adding a new device to your computer or are having problems getting a device working
Uninstall/Unplug a device
Choose this option to uninstall a device or to prepare the computer to unplug a device
< Back
Next >
Cancel

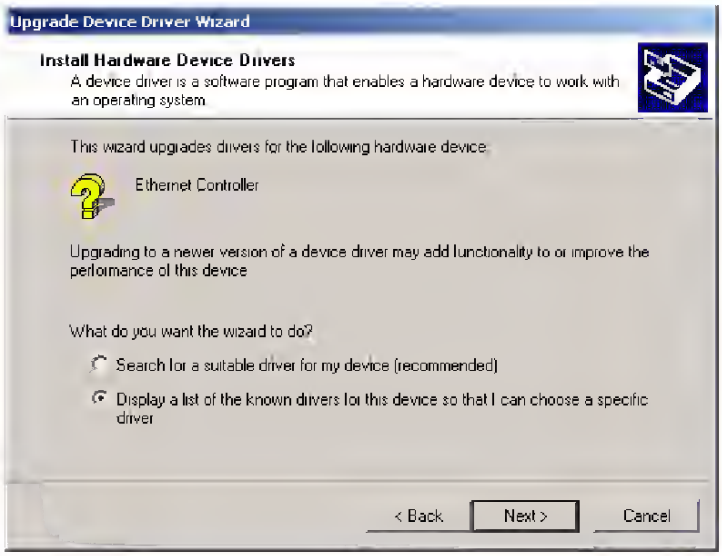
Downloaded from www.Manualslib.com manuals search engine

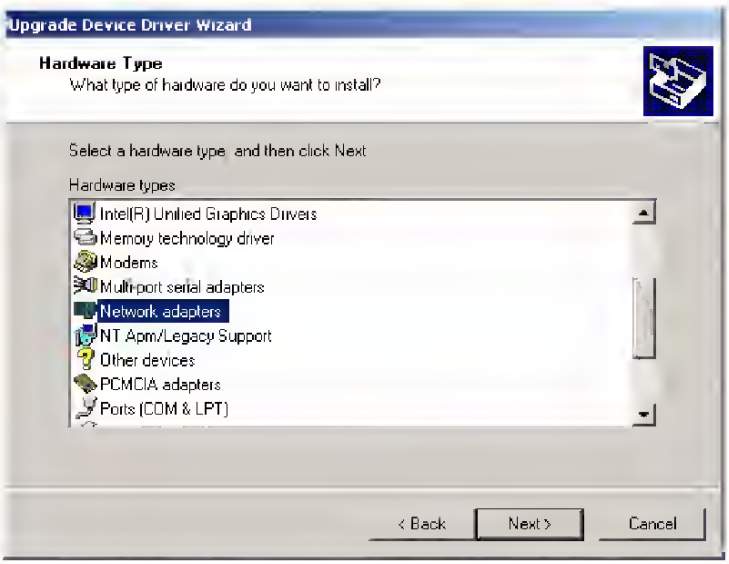

Add/Remove Hardware Wizard
New Hardware Detection
The wizard automatically locates new Plug and Play hardware
Windows is searching for new Plug and Play hardware to install
Searching...
< Back
Next >
Cancel

3. Choose Hardware Device "Ethernet Controller".


Add/Remove Hardware Wizard
Choose a Hardware Device
Which hardware device do you want to troubleshoot?
The following hardware is already installed on your computer. If you are having problems with one of these devices, select the device, and then click Next.
If you are attempting to add a device and it is not shown below, select Add a new device, and then click Next.
Devices
Add a new device
Ethernet Controller
ACPI Fixed Feature Button
Intel(r) 82802 Firmware Hub Device
Programmable interrupt controller
System timer
< Back
Next >
Cancel

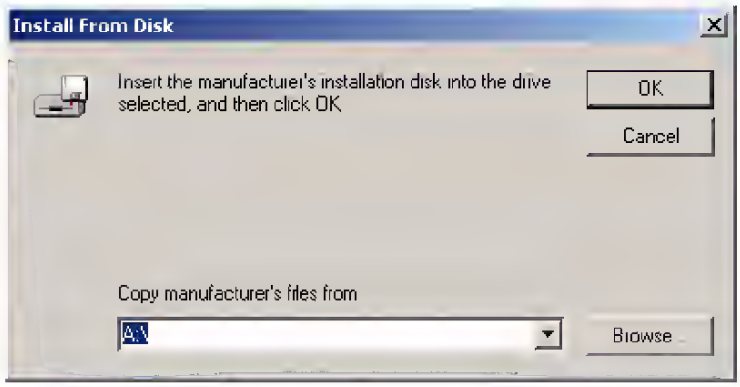
Downloaded from www.Manualslib.com manuals search engine

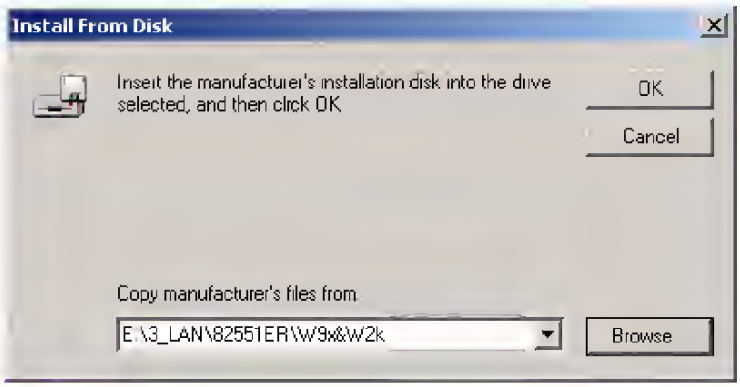

Upgrade Device Driver Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard upgrades drivers for the following hardware device:
Ethernet Controller
Upgrading to a newer version of a device driver may add functionality to or improve the performance of this device.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel



Downloaded from www.Manualslib.com manuals search engine

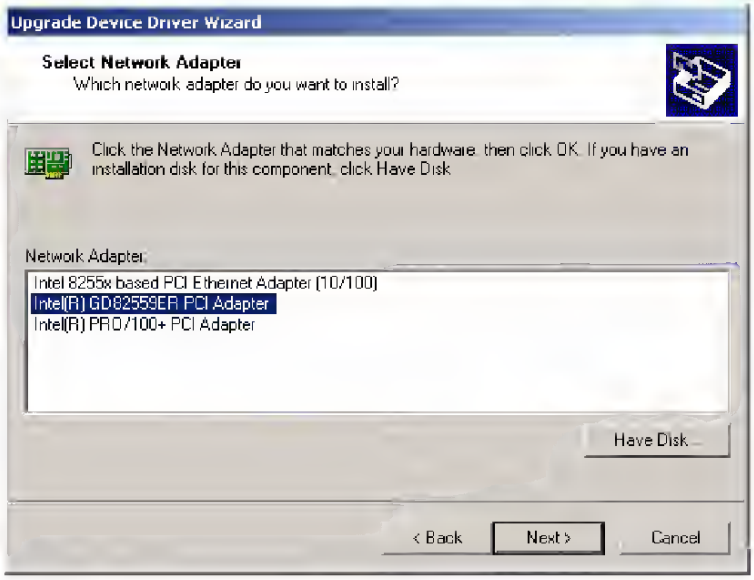
4. Insert the CD into D: drive
   a. Fill in the Find the LAN chipset folder at the directory of PCM-9587 win2000 folder from CD ROM drive
   b. Click “OK”.

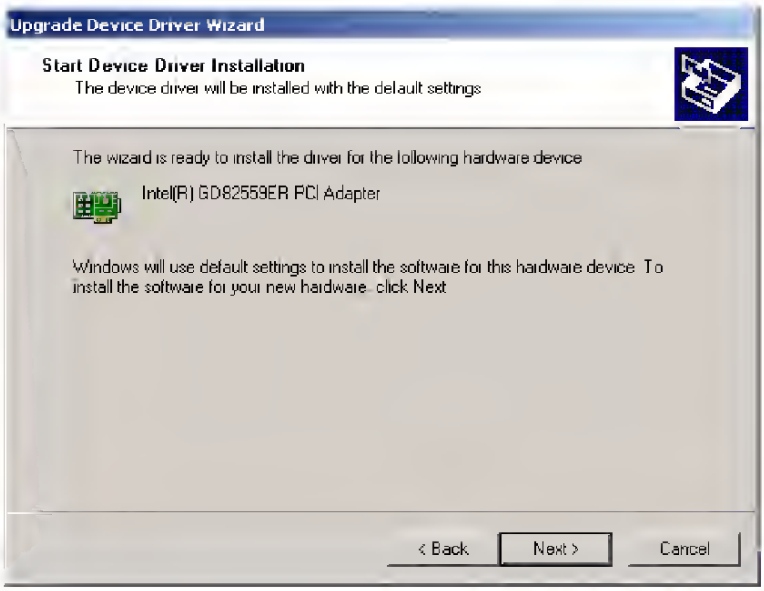




5. Choose the "Intel(R) GD82559ER PCI Adapter" item. Click “Next”.

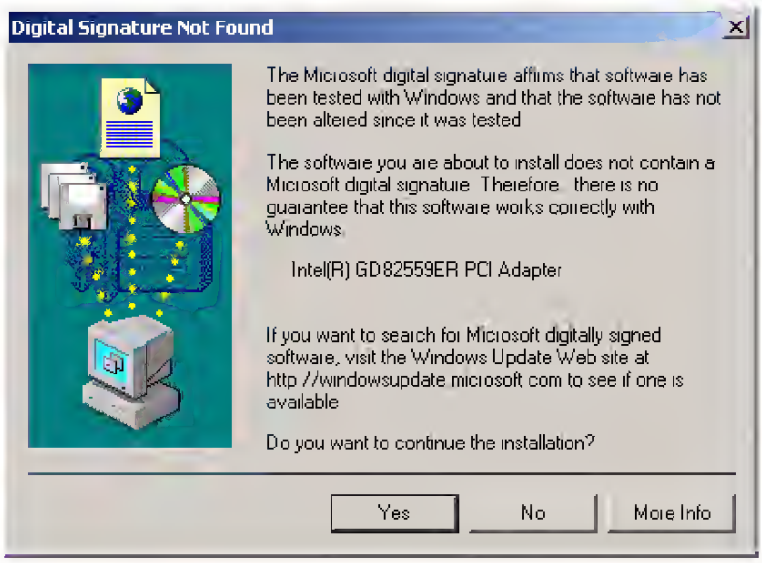
Downloaded from www.Manualslib.com manuals search engine


Upgrade Device Driver Wizard
Select Network Adapter
Which network adapter do you want to install?
Click the Network Adapter that matches your hardware, then click OK. If you have an installation disk for this component, click Have Disk.
Network Adapter:
Intel 8255x based PCI Ethernet Adapter (10/100)
Intel(R) GD82559ER PCI Adapter
Intel(R) PRO/100+ PCI Adapter
Have Disk...
< Back
Next >
Cancel


Upgrade Device Driver Wizard
Start Device Driver Installation
The device driver will be installed with the default settings
The wizard is ready to install the driver for the following hardware device
Intel(R) GD82559ER PCI Adapter
Windows will use default settings to install the software for this hardware device. To install the software for your new hardware, click Next.
< Back
Next >
Cancel

Downloaded from www.Manualslib.com manuals search engine

6. a. Make sure the configurations of relative items are set correctly
   b. Click “Next” button


Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
Intel(R) GD82559ER PCI Adapter
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available
Do you want to continue the installation?
Yes
No
More Info

7. Click “Finish” to close this wizard.

Upgrade Device Driver Wizard
Completing the Upgrade Device Driver Wizard
Intel(R) GD82559ER PCI Adapter
Windows has finished installing the software for this device
To close this wizard, click Finish
< Back
Finish
Cancel

7.4 Further information

Intel website: www.intel.com
Advantech websites: www.advantech.com
www.advantech.com.tw

Downloaded from www.Manualslib.com manuals search engine

Appendix A

Programming the GPIO and Watchdog Timer

The PCM-9587 is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

Downloaded from www.Manualslib.com manuals search engine

A.1 Supported GPIO Register

Below are detailed descriptions of the GPIO addresses and a programming sample.

A.1.1 GPIO Registers

CRF0 (GP10-GP17 I/O selection register. Default 0xFF)

When set to a '1', respective GPIO port is programmed as an input port.

When set to a '0', respective GPIO port is programmed as an output port.

CRF1 (GP10-GP17 data register. Default 0x00)

If a port is programmed to be an output port, then its respective bit can be read/written.

If a port is programmed to be an input port, then its respective bit can only be read.

CRF2 (GP10-GP17 inversion register. Default 0x00)

When set to a '1', the incoming/outgoing port value is inverted.

When set to a '0', the incoming/outgoing port value is the same as in data register.

Extended Function Index Registers (EFIRs)

The EFIRs are write-only registers with port address 2Eh or 4Eh on PC/AT systems.

Extended Function Data Registers (EFDRs)

the EFDRs are read/write registers with port address 2Fh or 4Fh on PC/AT systems.

A.1.2 GPIO Example program-1

```
-------------------------------------------------------------------------------------------------------------
 Enter the extended function mode, interruptible double-write
-------------------------------------------------------------------------------------------------------------
MOV DX,2EH
MOV AL,87H
OUT DX,AL
OUT DX,AL
-------------------------------------------------------------------------------------------------------------
Configured logical device 7 (GP10~GP17), configuration register CRF0,CRF1,CRF2
-------------------------------------------------------------------------------------------------------------
MOV DX,2EH
MOV AL,07H; point to Logical Device Number Reg.
OUT DX,AL
MOV DX,2FH
MOV AL,07H; select logical device 7
OUT DX,AL;
MOV DX,2EH
MOV AL,F0
OUT DX,AL
MOV DX,2FH
MOV AL,00H; 01:Input  00:output  for  GP10~GP17
OUT DX,AL
MOV DX,2EH
```


Downloaded from www.Manualslib.com manuals search engine

```
MOV AL,F2H;
OUT DX,AL
MOV DX,2FH
MOV AL,00H;Set GPIO is normal not inverter
OUT DX,AL;
MOV DX,2EH
MOV AL,F1H
OUT DX,AL
MOV DX,2FH
MOV AL,**H;  Put the output value into AL **H
OUT DX,AL
```

Exit extended function mode |

```
MOV DX,2EH
MOV AL,AAH
OUT DX,AL
```

Note! *The input/output data (**) is a value of time interval. The value range is from 01 (hex) to 3F (hex), and the related time interval is 1 sec. to 62 sec.*

Data	*Time Interval*
01	*1 sec.*
02	*2 sec*
03	*3 sec*
04	*4 sec*

Downloaded from www.Manualslib.com manuals search engine

A.2 Watchdog programming

Bellow is a sample of programming code for controlling the Watchdog Timer function.

```
------------------------------------------------------------------------------------------------------------
Enter the extended function mode, interruptible double-write |
------------------------------------------------------------------------------------------------------------
MOV DX,2EH
MOV AL,87H
OUT DX,AL
OUT DX,AL
------------------------------------------------------------------------------------------------------------
 Configured logical device 8, configuration register CRF6 |
------------------------------------------------------------------------------------------------------------
MOV DX,2EH
MOV AL,07H; point to Logical Device Number Reg.
OUT DX,AL
MOV DX,2FH
MOV AL,08H; select logical device 8
OUT DX,AL;
MOV DX,2EH
MOV AL,30H;Set watch dog activate or inactivate
OUT DX,AL
MOV DX,2FH
MOV AL,01H; 01:activate 00:inactivate
OUT DX,AL;
MOV DX,2EH
MOV AL,F5H; Setting counter unit is second
OUT DX,AL
MOV DX,2FH
MOV AL,00H
OUT DX,AL;
MOV DX,2EH
MOV AL,F6H
OUT DX,AL
MOV DX,2FH
MOV AL,05H; Set 5 seconds
OUT DX,AL
;-----------------------------------------------------------------------------------------------------------
; Exit extended function mode |
;-----------------------------------------------------------------------------------------------------------
MOV DX,2EH
MOV AL,AAH
OUT DX,AL
```


Downloaded from www.Manualslib.com manuals search engine

Appendix B

Pin Assignments

This appendix provides specialized information regarding:

Downloaded from www.Manualslib.com manuals search engine

B.1 LCD Backlight Connector (CN1)

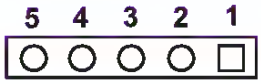


Table B.1: LCD Backlight Connector (CN1)

Pin	Signal
1	+12 V
2	GND
3	LVDS_BKLTEN
4	VBR
5	+5 V

B.2 TV Out Connector (CN2) (TV out optional by request)

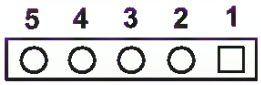


Table B.2: TV Out Connector (CN2) (TV out optional by request)

Pin	Signal
1	Y
2	C
3	GND
4	GND
5	CVBS

B.3 CD-IN Connector (CN3)

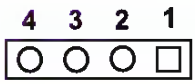


Table B.3: CD-IN Connector (CN3)

Pin	Signal
1	CD_R
2	GND
3	GND
4	CD_L

Downloaded from www.Manualslib.com manuals search engine

B.4 Audio Output Connector (CN4)

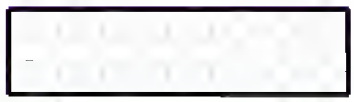


Table B.4: Audio Output Connector (CN4)

Pin	Signal	Pin	Signal
1	SPK_R+	2	SPK_R-
3	SPK_L+	4	SPK_L-
5	LOUT_R	6	LOUT_L
7	A_GND	8	A_GND
9	LIN_R	10	LIN_L
11	A_GND	12	A_GND
13	NC	14	MIC_L
15	MIC_R	16	A_GND

B.5 Power input Connector (CN5)

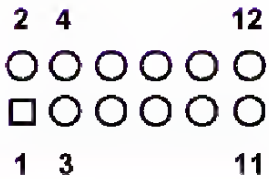


Table B.5: Power input Connector (CN5)

Pin	Signal	Pin	Signal
1	GND	2	GND
3	VCC	4	GND
5	VCC	6	5VSB
7	GND	8	PSON#
9	VCC	10	GND
11	VCC	12	+12V

B.6 -12V and -5V Connector (CN6)

Table B.6: -12V and -5V Connector (CN6)

Pin	Signal
1	-5V
2	GND
3	-12V

Downloaded from www.Manualslib.com manuals search engine

B.7 VGA Connector (CN7)

Table B.7: VGA Connector (CN7)

Pin	Signal	Pin	Signal
1	VGA_R	2	VGA_VCC
3	VGA_G	4	GND
5	VGA_B	6	NC
7	NC	8	VGA_DATA
9	GND	10	VGA_HS
11	GND	12	VGA_VS
13	GND	14	VGA_CLK
15	GND	16	NC

B.8 LVDS Connector (CN8)

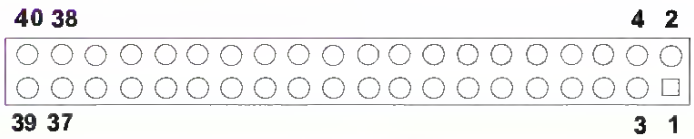


Table B.8: CN8 LVDS connector

Signal	Pin	Pin	Signal
VDD_FP	1	2	VDD_FP
GND	3	4	GND
VDD_FP	5	6	VDD_FP
YAM0	7	8	YBM0
YAP0	9	10	YBP0
GND	11	12	GND
YAM1	13	14	YBM1
YAP1	15	16	YBP1
GND	17	18	GND
YAM2	19	20	YBM2
YAP2	21	22	YBP2
GND	23	24	GND
CLKAM	25	26	CLKBM
CLKAP	27	28	CLKBP
GND	29	30	GND
DCLK	31	32	DDAT
GND	33	34	GND
YAM3	35	36	YBM3
YAP3	37	38	YBP3
BKLTEN	39	40	NC

Downloaded from www.Manualslib.com manuals search engine

B.9 DVI Connector (CN9)

Table B.9: DVI Connector (CN9)

Pin	Signal	Pin	Signal
1	C0#	2	VCC_DVI
3	C0	4	CK#
5	GND	6	CK
7	C1#	8	GND
9	C1	10	DVI_CLK
11	GND	12	DVI_DATA
13	C2#	14	HP_DET
15	C2	16	MI2C_DATA
17	VCC_DVI	18	MI2C_CLK
19	NC	20	NC

B.10 Gigabit LAN Connector (CN10 Optional)

Table B.10: Gigabit LAN Connector (CN10)

Pin	Signal	Pin	Signal
1	NC	2	NC
3	RJ45_7	4	RJ45_8
5	RJ45_4	6	RJ45_5
7	RJ45_3	8	RJ45_6
9	RJ45_1	10	RJ45_2

B.11 10/100M LAN Connector (CN11)

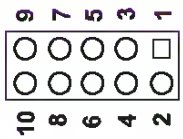


Table B.11: 10/100M LAN Connector (CN11)

Pin	Signal
1	VCC_LAN
2	ACTLED
3	RX+
4	RX-
5	LILED
6	GND
7	NC
8	GND
9	TX+
10	TX-

Downloaded from www.Manualslib.com manuals search engine

B.12 Gigabit LAN LED Connector (CN12 Optional)

Table B.12: Gigabit LAN LED Connector (CN12)

Pin	Signal	Pin	Signal
1	VCC_LAN25	2	GND
3	LINK	4	ACT
5	LINK100	6	LINK1000
7	NC	8	NC

B.13 System FAN Connector (CN13)

Table B.13: System FAN Connector (CN13)

Pin	Signal
1	GND
2	+12V
3	Detection

B.14 Floppy Disk Drive Connector (CN14)

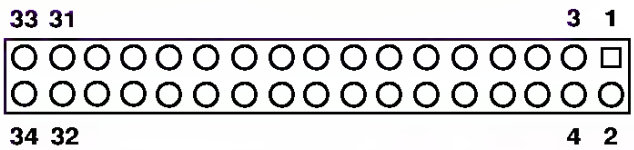


Table B.14: Floppy Disk Drive Connector (CN14)

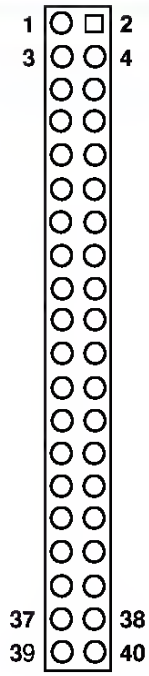
Pin	Signal	Pin	Signal
1	GND	2	RWC#
3	GND	4	NC
5	GND	6	DS1
7	GND	8	INDEX#
9	GND	10	MOA#
11	GND	12	DSB#
13	GND	14	DSA#
15	GND	16	MOB#
17	GND	18	DIR#
19	GND	20	STEP#
21	GND	22	WD#
23	GND	24	WE#
25	GND	26	TRACK0#
27	GND	28	WP#
29	GND	30	RDATA#
31	GND	32	HEAD
33	GND	34	DSKCHG#

Downloaded from www.Manualslib.com manuals search engine

B.15 Primary HDD Connector (CN15)

Table B.15: Primary HDD Connector (CN15)

Pin	Signal	Pin	Signal
1	Reset	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	KEY
21	DREQ	22	GND
23	DIOW	24	GND
25	DIOR	26	GND
27	IORDY	28	GND
29	DACK	30	GND
31	IDE IRQ14	32	NC
33	ADDR 1	34	66DET
35	ADDR 0	36	ADDR 2
37	CS1	38	CS3
39	DASP	40	GND

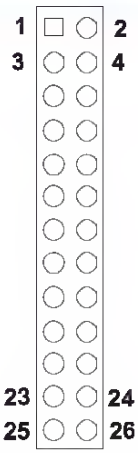


B.16 Printer Port Connector (CN16)

Table B.16: Printer Port Connector (CN16)

Pin	Signal	Pin	Signal
1	STROBE*	2	AUTOFD*
3	D0	4	ERR
5	D1	6	INIT*
7	D2	8	SLCTINI*
9	D3	10	GND
11	D4	12	GND
13	D5	14	GND
15	D6	16	GND
17	D7	18	GND
19	ACK*	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

* low active



Downloaded from www.Manualslib.com manuals search engine

B.17 USB Connector (CN18,20)

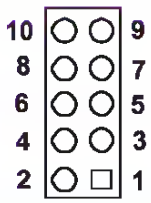


Table B.17: USB Connector (CN18,20)

Pin	Signal	Pin	Signal
1	+5 V	2	+5 V
3	UV0-/2-/4-	4	UV1-/3-/5-
5	UV0+/2+/4+	6	UV1+/3+/5+
7	GND	8	GND
9	GND	10	NC

B.18 DIO Connector (CN19)

Table B.18: DIO Connector (CN19)

Pin	Signal	Pin	Signal
1	DIO IN0	2	DIO OUT0
3	GND	4	GND
5	DIO IN1	6	DIO OUT1
7	VCC	8	NC
9	DIO IN2	10	DIO OUT2
11	GND	12	GND
13	DIO IN3	14	DIO OUT3

Downloaded from www.Manualslib.com manuals search engine

B.19 COM Port Connector (CN21)

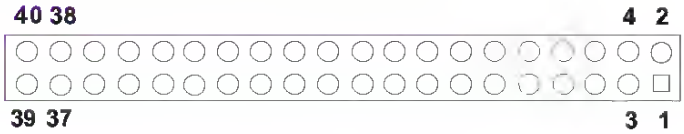


Table B.19: COM Port Connector (CN21)

Pin	Signal	Pin	Signal
1	COM1 DCD	2	COM1 DSR
3	COM1 RX	4	COM1 RTS
5	COM1 TX	6	COM1 CTS
7	COM1 DTR	8	COM1 RI
9	GND	10	GND
11	COM2 DCD/485TX-	12	COM2 DSR
13	COM2 RX /485TX+	14	COM2 RTS
15	COM2 TX /485RX+	16	COM2 CTS
17	COM2 DTR/485RX-	18	COM2 RI
19	GND	20	GND
21	COM3 DCD	22	COM3 DSR
23	COM3 RX	24	COM3 RTS
25	COM3 TX	26	COM3 CTS
27	COM3 DTR	28	COM3 RI
29	GND	30	GND
31	COM4 DCD	32	COM4 DSR
33	COM4 RX	34	COM4 RTS
35	COM4 TX	36	COM4 CTS
37	COM4 DTR	38	COM4 RI
39	GND	40	GND

Downloaded from www.Manualslib.com manuals search engine

B.20 Front Panel Connector (CN22)

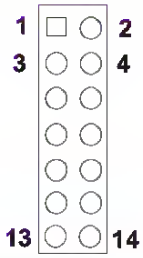


Table B.20: Front panel Connector (CN22)			
Pin	**Signal**	**Pin**	**Signal**
1	HDD LED+	2	HDD LED-
3	Power LED+	4	GND
5	Suspend LED	6	GND
7	LAN ACT+	8	LAN ACT-
9	LAN Link+	10	LAN Link-
11	VCC_DUAL	12	ATX Power Button
13	GND	14	Reset

B.21 SATA Connector 1 (CN23)

Table B.21: SATA Connector 1 (CN23)	
Pin	**Signal**
1	GND
2	TX0
3	TX0#
4	GND
5	RX0#
6	RX0
7	GND

Downloaded from www.Manualslib.com manuals search engine

B.22 SATA Connector 2 (CN24)

Table B.22: SATA Connector 2 (CN24)

Pin	Signal
1	GND
2	TX1
3	TX1#
4	GND
5	RX1#
6	RX1
7	GND

B.23 CPU FAN Connector (CN25)

Table B.23: CPU FAN Connector (CN25)

Pin	Signal
1	GND
2	+12V
3	SPEED DETECT

B.24 Extension SMBUS Connector (CN26)

Table B.24: Extension SMBUS Connector(CN26)

Pin	Signal
1	GND
2	SMBDATA
3	SMBCLK
4	3VSB

Downloaded from www.Manualslib.com manuals search engine

B.25 Keyboard and PS/2 Mouse Connector (CN27)

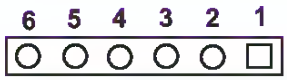


Table B.25: Keyboard and Mouse Connector (CN27)

Pin	Signal
1	KB CLOCK
2	KB DATA
3	MS CLOCK
4	GND
5	+5V
6	MS DATA

B.26 CPU FAN Connector (wafer box)(Optional)(CN28)

Table B.26: CPU FAN Connector (wafer box)(Optional)(CN28)

Pin	Signal
1	Detection
2	VCC 5V
3	GND

Downloaded from www.Manualslib.com manuals search engine

B.27 Mini PCI Connector(CN29)

Table B.27: Mini PCI Connector (CN29)

Pin	Signal	Pin	Signal
1	TIP Key	2	RING Key
3	8PMJ-33, 4	4	8PMJ-13, 4
5	8PMJ-63, 4	6	8PMJ-23, 4
7	8PMJ-73, 4	8	8PMJ-43, 4
9	8PMJ-83, 4	10	8PMJ-53, 4
11	LED1_GRNP	12	LED2_YELP
13	LED1_GRNN	14	LED2_YELN
15	CHSGND	16	RESERVED
17	INTB#	18	5V
19	3.3V	20	INTA#
21	RESERVED	22	RESERVED
23	GROUND	24	3.3VAUX
25	CLK	26	RST#
27	GROUND	28	3.3V

B.28 CompactFlash Card Connector (CN30)

Table B.28: CompactFlash Card Connector (CN30)

Pin	Signal	Pin	Signal
1	GND	2	SDD3
3	SDD4	4	SDD5
5	SDD6	6	SDD7
7	SDCS#1	8	GND
9	GND	10	GND
11	GND	12	GND
13	+5V	14	GND
15	GND	16	GND
17	GND	18	SDA2
19	SDA1	20	SDA0
21	SDD0	22	SDD1
23	SDD2	24	NC
25	NC	26	NC
27	SDD11	28	SDD12
29	SDD13	30	SDD14
31	SDD15	32	SDCS#3
33	NC	34	SDIOR
35	SDIOW	36	+5V
37	IRO15	38	+5V
39	CSEL	40	NC
41	IDERST	42	SDIORDY
43	NC	44	+5V
45	SDDASP	46	S66DET
47	SDD8	48	SDD9
49	SDD10	50	GND

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

Appendix C

System Assignments

This Appendix contains information of a detailed nature.

It includes:

- System I/O ports
- 1st MB memory map
- DMA channel assignments
- Interrupt assignments

Downloaded from www.Manualslib.com manuals search engine

C.1 System I/O Ports

Table C.1: System I/O Ports

Addr. range (Hex)	Device
000-01F	DMA controller
020-021	Interrupt controller 1, master
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
170- 178	Fixed disk (2nd IDE)
200-207	Reserved (Game I/O)
278-27F	Parallel printer port 2 (LPT 3)
2E8-2EF	Series port 4
2F8-2FF	Serial port 2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT 2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and printer adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3E8-3EF	Series port 3
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1

* PNP audio I/O map range from 220 ~ 250H (16 bytes)
  MPU-401 select from 300 ~ 330H (2 bytes)

Downloaded from www.Manualslib.com manuals search engine

C.2 1st MB memory map

Table C.2: 1st MB memory map

Addr. range (Hex)	Device
F0000h - FFFFFh	System ROM
*CC000h - EFFFFh	Unused (reserved for Ethernet ROM)
C0000h - CBFFFh	Expansion ROM (for VGA BIOS)
B8000h - BFFFFh	CGA/EGA/VGA text
B0000h - B7FFFh	Unused
A0000h - AFFFFh	EGA/VGA graphics
00000h - 9FFFFh	Base memory

* If Ethernet boot ROM is disabled (Ethernet ROM occupies about 16 KB)
* E0000 - EFFFF is reserved for BIOS POST

C.3 DMA channel assignments

Table C.3: DMA channel assignments

Channel	Function
0	Available
1	Reserved (audio)
2	Floppy disk (8-bit transfer)
3	Available (parallel port)
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

* Audio DMA select 1, 3, or 5
** Parallel port DMA select 1 (LPT2) or 3 (LPT1)

Downloaded from www.Manualslib.com manuals search engine

C.4 Interrupt assignments

Table C.4: Interrupt assignments

Interrupt#	Interrupt source
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 3	COM2
IRQ 4	COM1
IRQ 5	COM4
IRQ 6	FDD
IRQ 7	LPT1
IRQ 8	RTC
IRQ 9	Reserved (audio)
IRQ 10	COM3
IRQ 11	Reserved for watchdog timer
IRQ 12	PS/2 mouse
IRQ 13	INT from co-processor
IRQ 14	Primary IDE
IRQ 15	Secondary IDE for CFC

* Ethernet interface IRQ select: 9, 11, 15
* PNP audio IRQ select: 9, 11, 15
* PNP USB IRQ select: 9, 11, 15
* PNP ACPI IRQ select: 9, 11, 15

Downloaded from www.Manualslib.com manuals search engine

Appendix D

Optional Extras for the PCM-9587

Downloaded from www.Manualslib.com manuals search engine

The PCM-9587 requires several cables for normal operation. You can make them yourself or purchase an optional cable kit assembly, which includes the following

D.1 PCM-10586-6200E Cable kit for PCM-9587

Table D.1: PCM-10586-6200E wiring kit 9587

Part No.	Cable Description	PCM-9587F Connector	Terminating Connector
1701340603	Dual floppy, 3.5" and 5.25" (34p)	CN14	34-pin dual floppy
1700260250	Parallel Port	CN16	26pin,female DSUB
1700001296	VGA CRT	CN7	2 x 8-pin header (2 mm) 15-pin DSUB
1703060191	KB/mouse cable	CN27	6-pin circular DIN
1701400181	COM 1-4 cable	CN21	40-pin, 9-pin male DSUB x 4
1700160160	Audio cable	CN4	F3.5 mm 16-pin, 5 female phone jacks
1701400452	3.5" IDE DMA/66 (40p)	CN15	40-pin, 2.54 mm, female IDC (450 mm)
1703100260	USB cable	CN20	10-pin, IDE 2.0 mm, USB x 2 (26 cm)
1700071000	SATA cable	CN23	7P/7P 100CM
1703050106	TV-out cable	CN2	Wire 10 cm 5P TV-out
1700000410	TMDS cable	CN9	Cable DVI- 26P/DF13-20P 20 cm
1701100202	Network, 10/100 Base-T	CN11	RJ45 8-pin modular

Downloaded from www.Manualslib.com manuals search engine

Appendix E

Mechanical Drawings

Downloaded from www.Manualslib.com manuals search engine

E.1 Mechanical Drawings

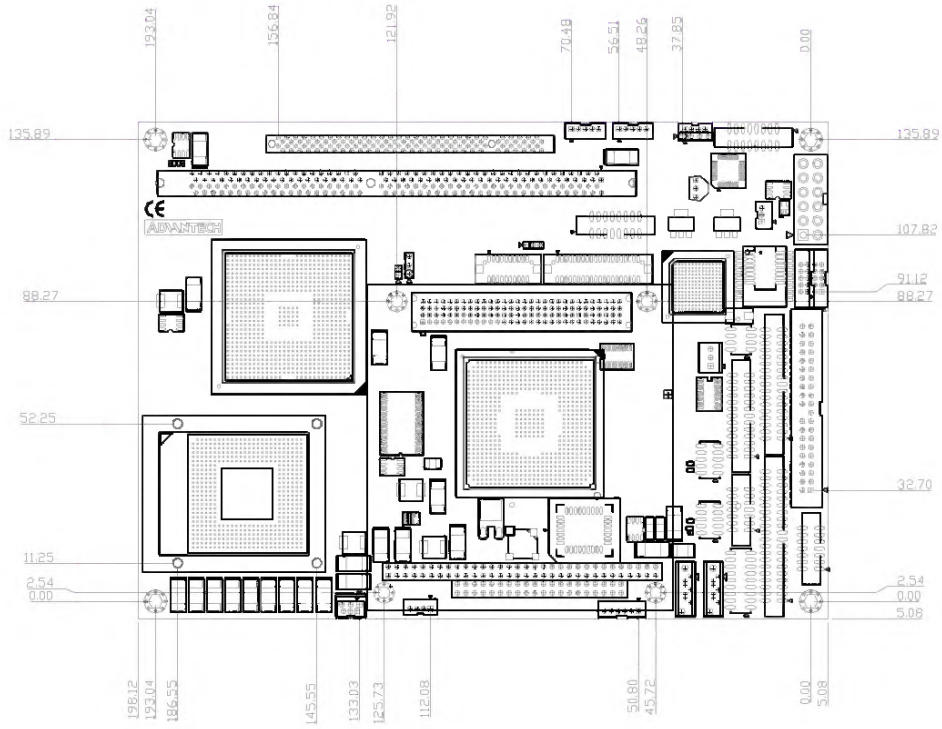


Figure E.1 PCM-9587 Mechanical Drawing (component side)

Downloaded from www.Manualslib.com manuals search engine

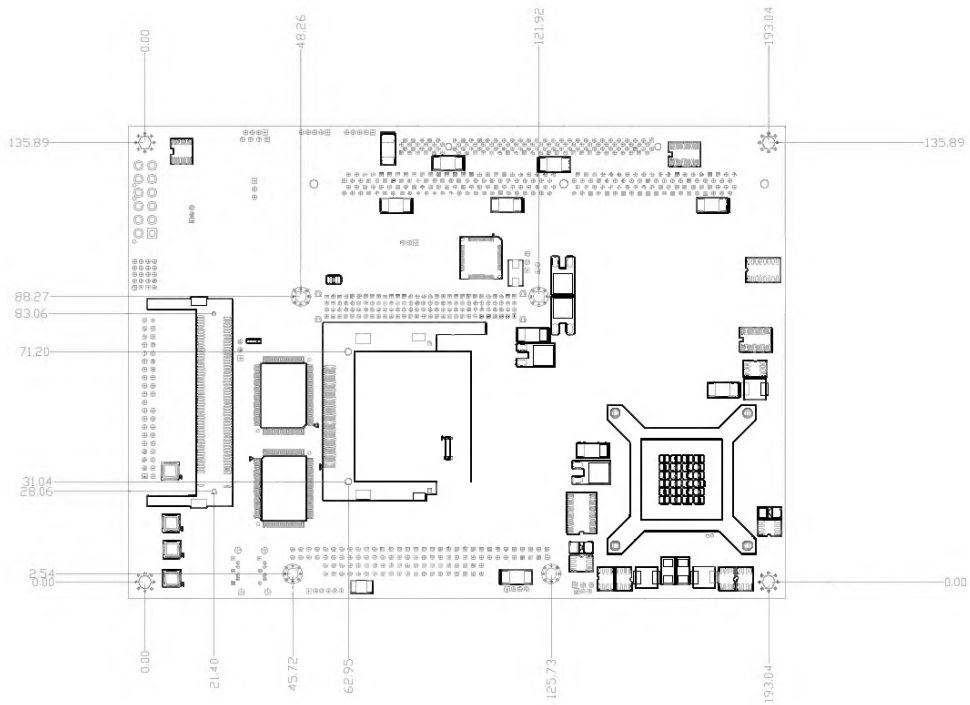


Figure E.2 PCM-9587 Mechanical Drawing (solder side)

Downloaded from www.Manualslib.com manuals search engine

Trusted ePlatform Services

ADVANTECH

www.advantech.com

Please verify specifications before quoting. This guide is intended for reference purposes only.

All product specifications are subject to change without notice.

No part of this publication may be reproduced in any form or by any means, electronic, photocopying, recording or otherwise, without prior written permission of the publisher.

All brand and product names are trademarks or registered trademarks of their respective companies.

© Advantech Co., Ltd. 2008

Downloaded from www.Manualslib.com manuals search engine